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Bulletin of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE.
Vol. LXIV. No. 1.

THE MYRIOPODA OF THE AUSTRALIAN REGION.

By Ralph V. Chamberlin.

CAMBRIDGE, MASS., U. S. A.:
PRINTED FOR THE MUSEUM.
July, 1920.

No. 1.— *The Myriopoda of the Australian Region.*

By Ralph V. Chamberlin.

The present more or less preliminary survey aims to cover the Australian Region in the broad sense, including thus New Guinea and the islands westward to Celebes, Australia, Tasmania, New Zealand, and the various Polynesian islands. It lists the known Chilopoda, Symphyla, Pauropoda, and Diplopoda and adds diagnoses of numerous new forms in the Museum of Comparative Zoölogy. By far the greater number of these occur in extensive and highly interesting collections made by Dr. W. M. Mann in the Solomons, Fijis, and in Australia (127 species) and by Prof. W. M. Wheeler in New Zealand, Australia, and in the Hervey and Society Islands (63 species). Among other collections may be mentioned those made by Dr. Thomas Barbour chiefly in New Guinea and the Moluccas (21 species), by Mr. G. H. Hardy in Tasmania (14 species), and by Dr. H. L. Clark in northern Queensland (9 species).

CHILOPODA.

SCOLOPENDROMORPHA.

Cryptopidae.

1. Cryptops haasei Attems.

Zool. jahrb. Syst., 1903, **18**, p. 105.

Cryptops australis Kohlrausch (*non* Newport), Archiv naturg., 1881, **47**, p. 127.[1]

Cryptops sulcatus Haase (*non* Meinert), Abhandl. Mus. Dresden, 1887, **5**, p. 80.[2]

Cryptops haasei Attems, Fauna südw. Austr., 1908, **2**, p. 106;[3] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 2.[4]

Localities.— Queensland: Rockhampton.[1, 2] New South Wales: Sydney.[1, 2] W. Australia: York, Serpentine, Harvey, Donnybrook,[3] Broome.[4]

2. CRYPTOPS SPINIPES Pocock.

Ann. mag. nat. hist., 1891, ser. 6, **8**, p. 156.[1] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 2.[3]

Cryptops setosus Pocock, *Ibid.*, p. 157.[2]

LOCALITIES.— New South Wales: Sydney,[1] Blue Mts., Leura, Wentworth Falls (W. M. Wheeler); Queensland: Blackall Range, Herberton, Cedar Creek, Atherton.[3] New Zealand.[2] Solomons: Ngi (W. M. Mann). Fijis: Lakeba Lau (W. M. Mann).

3. CRYPTOPS MEGALOPORUS Haase.

Abhandl. Mus. Dresden, 1887, **5**, p. 80.[1]

LOCALITY.— New Zealand: Auckland Island.[1]

4. CRYPTOPS LAMPRETHUS, sp. nov.

TYPE.— M. C. Z. 1,925. PARATYPE.— M. C. Z. 2,034. New Zealand: Plummerton, Taumarunni, August, 1914 (W. M. Wheeler).

Color ferruginous.

Cephalic plate without sulci, overlapped by the first dorsal plate. First tergite without sulci. Paired sulci complete first on eighth dorsal plate. Prosternum presenting a straight chitinous anterior edge which is not at all or but vaguely and very slightly angulate at middle, without hairs. Sternites each with a cruciform impression of which the longitudinal furrow is wider and deeper and the transverse one curved with concavity cephalad; last three or four plates lacking this impression. Last ventral plate without sulci, narrowed caudad, caudal margin straight or slightly incurved. Spiracles large, longitudinally elliptic. Coxopleurae short, caudally subtruncate, pores large and small, numerous, in numerous rows, not reaching caudal margin. Anal legs missing. Penult legs clothed ventrally with dense, very fine hairs in striking contrast with the much longer and coarser hairs and setae laterally and above.

Length, 28 mm.

The paratype does not show the peculiarity in hair of the penult legs. The anal legs have six teeth on the metatarsal and five on the first tarsal. Femur and tibia densely clothed beneath with spinescent setae.

5. CRYPTOPS MIRUS sp. nov.

TYPE.— M. C. Z. 1,931. Society Islands: Tahiti, Tipaeni Valley, 29 September, 1899. ALBATROSS.

Color ferruginous.

Cephalic plate overlapped caudally by the first dorsal plate, with a pair of short sulci in front of caudal margin. Antennae unusual because consisting of only seven articles which are unusually long. First tergite with two longitudinal sulci, at least excepting across the anterior border, other tergites bisulcate and mostly also with a deep median sulcus and an oblique curved sulcus on each side. Second tergite shorter than the first. Last tergite with caudal end triangular, the sides of the caudal margin straight and the angle not at all rounded, plate broadly and strongly depressed in front of the caudal angle. Anterior chitinous, edge of prosternum nearly straight, slightly indented at middle. Ventral plates coarsely though subsparsely punctate, without cornicles or other such elevations or roughening; each with a conspicuous cruciform impression, with the longitudinal furrow much the stronger. Coxopleurae caudally rounded, short; caudal margin with an uncertain number of spines, all but one having been rubbed off the type, pores numerous, not reaching caudal margin by a wide space. Last ventral plate narrowed caudad, caudal margin truncate, with corners rounded. Anal legs missing.

Length, 19 mm.

6. CRYPTOPS NIUENSIS, sp. nov.

TYPE.— M. C. Z. 1,942. Niue Island, 25 November, 1899 (Trop. Pacific Exped. ALBATROSS). PARATYPES.— M. C. Z. 1,946, 1,950, 1,954, 2,122–2,129, 2,169 — Fijis: Nadarivatu, Labasa, Turuca, Somo Somo, Vanua Ava (W. M. Mann). Solomons: Pamua, Wainoni Bay, Auki, Fulakora, "Atta trip" (W. M. Mann). Hervey Islands: Rarotonga (W. M. Wheeler).

Middle region brownish, head and first two plates and posterior plates light ferruginous; most plates blackish along lateral borders and the posterior ones in addition with a bigeminate median dorsal stripe; dark markings on pleural region as well.

Caudal edge of head overlapped by the first dorsal plate. Antennae composed of seventeen articles. First dorsal plate not sulcate. Tergites bisulcate from third caudad; in addition there is a median keel set off by two longitudinal furrows, and on each side toward lateral border a deep, curving sulcus. Anterior margin of prosternum slightly convex on each side, with a distinct darker chitinous edge, bristles three or four on each side. Ventral plates with the usual cruciform impression of which the transverse sulcus is much the finer and curves forward on each side. Last ventral plate with caudal margin very slightly convex. Spiracles broadly elliptic. Coxopleurae but slightly extended caudad, subtruncate or very slightly convex caudally, pores thirty or a few less, failing by a wide space of reaching caudal margin. Penult legs with numerous long brown setae, no short fine whitish hairs. Anal legs not furrowed above and without teeth or process at distal end of any joints above, though the femur and tibia are obtusely notched at the distal end above, femur bearing numerous stout setae below and above, but no true spines, tibia with a single tooth or spine at distal end below; metatarsus ventrally with a single series of eight or nine teeth, the first joint of tarsus with three of four.

Length, 20 mm.

7. Cryptops sulciceps, sp. nov.

Type.— M. C. Z. 1947. Paratypes.— M. C. Z. 1,948, 1,986, 2,028. Fijis: Nadarivatu, Munia, Mbivatu (W. M. Mann.).

Color fulvous.

The head overlapping the first tergite or rarely slightly overlapped by the latter, with two fine sulci extending over its entire length, diverging forward, much as in *C. galatheae*. First tergite with a curving, transverse sulcus; with no longitudinal sulci. Antennae composed of seventeen articles. Paired dorsal sulci present from third tergite caudad. Prosternal margin convex each side of middle; with a series of five setae on each side. A few anterior sternites with a cruciform impression, but beginning with the sixth the longitudinal sulcus is not evident caudad of the transverse one, and soon is evident only as a short mark in front of middle. Last ventral plate narrowed caudad, caudal corners widely rounded, caudal margin mesally slightly incurved. Anterior spiracles elliptic. Coxopleurae caudally truncate; pores small, numerous, above thirty, not reaching dorsal plate by a wide space; with spines caudally and some among pores. Femur and tibia of anal legs armed ventrally and on the sides with numerous stout spines (similar ones on immediately preceding legs soon passing into ordinary setae in going forward), dorsally with ordinary setae, the tibia also with a single stout tooth near distal end; metatarsus with a series of about eight to eleven teeth below; the first tarsal joint with two stout teeth below.

Length, 18 mm.

8. CRYPTOPS ETHOPHOR, sp. nov.

TYPE.— M. C. Z. 2,013. PARATYPES.— M. C. Z. 2,014. Fijis: Lasema (W. M. Mann).

Color fulvous or in part light ferruginous.

Cephalic plate with two short sulci behind. Antennae short; composed of seventeen articles, all of which are very short. First dorsal plate with a sharply impressed cervical sulcus which is angled at the middle; paired longitudinal sulci present, rather light, converging cephalad but not meeting. Second tergite only half or less the length of the first. Prosternum with anterior margin chitinous, weakly convex on each side, shallowly emarginate at middle, the margin wholly smooth or with but one or two much reduced hairs on each side. Ventral plates not roughened. Last ventral plate narrowed caudad, caudal corners rounded, caudal margin between them straight. Spiracles nearly circular. All tarsi excepting those of last two pairs of legs uniarticulate. Setae of legs excepting the twenty first of ordinary form. Femur and tibia of anal legs armed beneath with numerous long spiniform setae, a narrow longitudinal naked area on each; the spinules on ectal side and those on mesal side above much shorter. Metatarsus of anal legs with three teeth beneath, the first tarsal joint with two.

Length, 8–9 mm.

9. CRYPTOPS RELICTUS, sp. nov.

TYPE.— M. C. Z. 2,118. PARATYPES.— M. C. Z. 2,119. Fijis: Nagasu (W. M. Mann).

Color orange to ferruginous.

Caudal margin of head free, only slightly overlapping the first plate. Antennae composed of seventeen articles. First dorsal plate with transverse sulcus angularly bent back at middle; two longitudinal sulci which bifurcate anteriorly, the inner branches meeting at the angle of the transverse sulcus. Anterior margin of prosternum a little indented at middle, each side only slightly convex, marginal setae 4 + 4. Sternites with the usual cruciform impression of which both arms are distinctly impressed. Last ventral plate with caudal margin convex and bending evenly about corners to sides which diverge cephalad. Coxopleurae caudally truncate; bearing spinescent setae along caudal and lateral margins; pores exceedingly fine, almost obliterated, not numerous. Penult legs chiefly with ordinary setae, but with fewer somewhat stouter ones on caudal (mesal) surface. Femur and tibia of anal legs furrowed at distal end above; no teeth or spines at distal end above on any of the joints; femur densely armed below and mesally with stout, spinescent setae, with no naked ventral area; femur similarly armed but in addition with a single stout tooth; metatarsus with a few stout, spinescent setae on mesal side and with a series of four or five stout teeth beneath; first tarsal joint with two stout teeth beneath.

Length, 21 mm.

10. CRYPTOPS POLYODONTUS Attems.

Zool. jahrb. Syst., 1903, **18**, p. 106.[1]

LOCALITIES.— Chatham Island. Stephens Island.[1]

11. CRYPTOPS LORIAE Silvestri.

Ann. Mus. civ. Genova, 1894, **34**, p. 628.[1]

LOCALITY.— New Guinea.[1]

12. CRYPTOPS AUSTRALIS Newport.

Trans. Linn. soc. London, 1845, **19**, p. 408.[1] Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 129.[2] Kraepelin, Fauna südw. Austr., 1908, **2**, p. 106;[3] Arkiv zool., 1916, **10**, no. 2, p. 2.[4]

LOCALITIES.— New Zealand:[1] Wellington.[2] W. Australia: Lion Mill, Mundaring Weir, Guildford, Cannington and Pickering Brook in the Swan River District, Jarrahdale, Harvey, Bunbury, Boyanup, Donnybrook, Bridgetown, Perth, Albany.[3] Queensland: Cedar Creek.[4]

13. CRYPTOPS TAHITIANUS, sp. nov.

TYPE.— M. C. Z. 2,075. Society Islands: Tahiti (W. M. Wheeler).

Allied to *C. australis* Newport and *doriae* Pocock. First dorsal plate overlapping the cephalic plate; without curved transverse sulcus. Antennae composed of fifteen articles. Anterior margin of prosternum very slightly convex on each side; setae 4 + 4. Cruciform impression on sternites distinct back to the nineteenth plate, the longitudinal branch about as well developed as the transverse; on the twentieth and twenty first plates a weak longitudinal sulcus also evident but a transverse impression indicated obscurely only on the first of these. Paired dorsal sulci present from the third segment caudad. Last ventral plate with sides a little convex, a little converging caudad; caudal margin nearly straight, vaguely convex. Coxopleurae caudally slightly rounded, subtruncate; the caudal margin bearing a number of spiniform setae; caudal third free of pores. Femur and tibia of anal legs bearing numerous slender spines ventrally and on the sides but without teeth; metatarsus with a series of nine or ten teeth, the first tarsal article with four. Penult legs beneath with numerous fine hairs and scattered longer and stouter setae; no spines or teeth. Spiracles large, longitudinally subelliptic.

Length, about 15 mm.

14. CRYPTOPS ZELANDICUS, sp. nov.

TYPE.— M. C. Z. 1,922. New Zealand: Wellington, 18 August 1914 (W. M. Wheeler).

Color fulvous.

Cephalic plate with caudal margin free, overlapping the first dorsal plate, a short median sulcus in frontal region and a pair of short submedian sulci in front of caudal margin. First dorsal plate without either transverse or longitudinal sulci. Second tergite with paired longitudinal sulci; much shorter than the first one. Last dorsal plate with caudal portion triangular, the median angle narrowly rounded. Prosternum with anterior margin convex on each side, edge chitinous, bearing on each side three or four setae. Ventral plates not roughened; last one caudally truncate. Coxopleurae short, caudally rounded; caudal margin bearing several spinescent setae; pores few (near twenty), partly covered, not reaching caudal margin. Penult legs with third and fourth joints beneath with numerous spines, corresponding ones on other legs becoming fewer and more slender in going cephalad. Anal legs with similar spinescent setae; metatarsus armed beneath with six teeth, first tarsal with two.

Length, 13 mm.

15. Paracryptops weberi Pocock.

Ann. mag. nat. hist., 1891, ser. 6, **7**, p. 227.[1]

Locality.— Flores: Maumerie.[1]

16. Paracryptops breviunguis Silvestri.

Ann. Mus. civ. Genova, 1894, **34**, p. 629.[1]

Locality.— New Guinea.[1]

17. Theatops spinicaudus (Wood).

Opisthemega spinicauda Wood, Journ. Acad. nat. sci. Phil., 1863, ser. 2, **5**, p. 36.
Opisthemega insulare Meinert, Proc. Amer. philos. soc., 1886, **23**, p. 209.[1]

Locality.— Hawaiian Islands.[1]

This species is common in the southeastern United States.

18. Otoctyptops melanostomus (Newport).

Scolopocryptops melanostoma Newport, Trans. Linn. soc. London, 1845, **19**, p. 406.
Otocryptops luzonicus var. *australis* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 98.[1]
Otocryptops luzonicus Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 633.[2] Pocock, Weber's Reise, 1894, **3**, p. 315.[3]
Otocryptops aculeatus Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 478.[4]
Otocryptops luzonica Attems, *Ibid.*, p. 479.[5]
Otocryptops melanostomus Kraepelin, Revis. Scolop., 1903, p. 74.[6] Attems, Zool. jahrb. Syst., 1914, **37**, p. 380 [7]; Bijdr. dierk., 1915, **20**, p. 4.[8]

Localities.— New Guinea:[1, 6] Moroka,[2] Zoutbron. Celebes.[3, 6] Gilolo.[7] Halmaheira: Soah Konorah.[4] Ceram: Honitetu.[8]

19. Otocryptops verdescens, sp. nov.

Type.— M. C. Z. 1,943. Paratypes.— M. C. Z. 1,944. Fijis: Nasoqo (W. M. Mann).

Color dilute brown of a greenish tinge; head and caudal end of body orange or light ferruginous.

Head not margined. From *aberrans* it is at once distinguishable in wholly lacking prosternal teeth, the anterior margin of prosternum being wholly smooth, presenting merely a long, nearly straight chitinous edge which is slightly emarginate at the middle. Coxopleural processes long and acute; coxopleural pores extending dorsad to the tergite. Last ventral plate caudally incurved or somewhat angularly excavated. Anal legs very long and slender as in the preceding species; spines of prefemur both well developed, the ventral one about equalling the diameter of the joint at the level of its base.

Length, 10 mm.; anal legs, near 6 mm.

This species stands apart with the following one from all others in having tergites margined much farther forward, the margination being distinctly present from the seventh plate caudad.

20. Otocryptops aberrans, sp. nov.

Type.— M. C. Z. 1,941. Fijis: Nansori, Vesari (W. M. Mann).

Color ferruginous.

Head not margined, smooth. Antennae with first three articles nearly glabrous. Anal tergite with caudal margin mesally strongly bulging beyond lateral angles; the latter above with an acute spine. Ventral plates smooth, unfurrowed. Prosternum with anterior margin lightly convex, bearing two distinct black teeth on each side, of which the mesal is larger. Coxopleural process long and acute, much exceeding the ventral plate, pores reaching to the dorsal plate above. Anal legs very long and slender; femur with both spines well developed; the ventral larger, length less than diameter of joint.

Length, near 18 mm. Length of anal legs, near 8 mm.

This species is readily distinguished from the others in having the tergites clearly margined from the seventh to ninth caudad.

20a. Scolopocryptops miersi fijiensis, subsp. nov.

Type.— M. C. Z. 1,945. Paratypes.— M. C. Z. 2,023. Fijis: Nasoqo, Nadarivatu (W. M. Mann).

Scolopocryptops miersi has heretofore been recorded only from the Western Hemisphere. The present form agrees very closely with West Indian specimens in most details; but in the anal legs the ventral spine is much larger as is also the dorsal spine which is of about the same size as the ventral spine in *miersi* proper; furthermore, the ventral spine is farther distad than the dorsal one, the reverse being true in *miersi*, and it is nearer the middle of the length of joint (distance of distal edge of base of spine from proximal end of article to total length of article as 11:25 whereas in *miersi* it is as 11:31). Anal legs shorter. The strongly chitinous anterior edge of prosternum convex on each side, slanting a little caudad of ectad away from middle, its outer end elevated, dentiform, or not.

Length, 42 mm., being thus considerably smaller than the average adult *miersi*.

OTOSTIGMIDAE.

21. OTOSTIGMUS GLABER, sp. nov.

TYPE.— M. C. Z. 1,933. PARATYPES.— M. C. Z. 1,934, 1,938, 1,949, 1,990, 2,019. Fijis: Lakeba Lau, Nansori, Nadarivatu, Lomati, Vanua Ava (W. M. Mann).

Color above, green, nearly uniform; antennae often distally fulvous.

Dorsal plate very finely and densely punctate. Antennae consisting of eighteen articles of which the first two and a half are glabrous. Dorsal plates from the fifth inclusive on with complete paired sulci. Eleventh dorsal plate margined, twelfth less completely so, others margined more or less completely, the twenty first most sharply so. All dorsal plates wholly smooth and shining, without trace of keels or tuberculation. Last tergite with a median longitudinal depression in front of the caudal angle. Prosternal dental plates each with four primary teeth of which the three innermost of each are fused excepting distally, the ectal one free and notched distally; sometimes only three teeth, with two innermost fused. Anterior ventral plates with sulci only across anterior border; but in the middle and posterior regions the sulci extend caudad to or beyond the middle of plate. Last ventral plate narrowed caudad, sides nearly straight, caudal margin weakly incurved, caudal corners rounded. Coxopleurae with long processes which exceed the last ventral plate by much more than their length; distally with two spinous points, laterally with two or three and dorsally with two (one on ectal and one on mesal edge), or often with but one. From first eight to first eleven legs with two tarsal spines, or some intermediate ones beyond the fourth with but one, the others to the twentieth inclusive with but one spine. Femur of the anal legs ventrally on ectal side with five to eight spines, ventrally toward mesal side with three to six, on mesal surface with a series of two to four stouter spines, and on mesodorsal edge with two (or three) spines in addition to the one at the distal angle.

Length, 35 mm.

22. OTOSTIGMUS TUBERCULATUS (Kohlrausch).

Branchiotrema tuberculatum Kohlrausch, Arch. naturg., 1881, **47**, p. 74.[1]
Otostigmus tuberculatus Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 4.[2]

LOCALITIES.— Queensland: Rockhampton,[1] Atherton.[2]

22a. OTOSTIGMUS TUBERCULATUS PAUPERATUS Attems.

Bijdr. dierk., 1915, **20**, p. 4.[1]

LOCALITIES.— W. Ceram: Waigeu, Beo.[1]

23. OTOSTIGMUS ASTENUS (Kohlrausch).

Branchiotrema astenon Kohlrausch, Arch. naturg., 1881, **47**, p. 72.[1]
Branchiotrema calcitrans Kohlrausch, *Ibid.*, p. 73.[2]
?*Branchiotrema luzonicum* Kohlrausch, *Ibid.*, p. 73.
Otostigma orientale Haase (non Porath in part), Abhandl. Mus. Dresden, 1887, **5**, p. 73.
Otostigma orientale var. *acutidens* Haase, *Ibid.*, p. 74.[3]
Otostigma discretum Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 528.[4]
Otostigmus orientalis Brölemann, Mem. Soc. zool. France, 1895, **8**, p. 527.
Otostigmus astenon Pocock, Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 325, 327;[5] Kraepelin, Revis. Scolop., 1903, p. 114[6]; Arkiv zool., 1916, **10**, no. 2, p. 4.[7]

LOCALITIES.— Queensland: Rockhampton,[2] Cedar Creek.[7] New Guinea: Moroka.[4] Hermit Island.[3] Solomons:[6] Fulaga (W. M. Mann). Samoa.[6] Tongan Islands: Eua.[1] Carolines.[6] Ellice Islands: Funafuti, Rotuma.[5] Mariana Island.[6]

24. OTOSTIGMUS LORIAE Silvestri.

Otostigma loriae Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 627.[1]

LOCALITY.— New Guinea.[1]

25. OTOSTIGMUS POLITUS Karsch.

Otostigma politum Karsch, Berlin. ent. zeitsch., 1881, **25**, p. 219.
Otostigmus politus Kraepelin, Revis. Scolop., 1903, p. 109[1]; Arkiv zool., 1916, **10**, no. 2, p. 5.[2]
Otostigma polita Attems, Semon's Forschungsreise, 1898, **5**, p. 508.[3]

LOCALITIES.— Queensland: Burnett District,[3] Herberton, Malanda, Belenden Ker.[2] New Guinea.[1]

26. OTOSTIGMUS ATELES, sp. nov.

Otostigmus sp. Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 6, fig. 2.[1]

LOCALITY.— Queensland: Malanda.[1]

27a. OTOSTIGMUS RUGULOSUS var. MERTONI Ribaut.

Abhandl. Senckenb. gesellsch., 1912, **34**, p. 283.[1]

LOCALITY.— Aru Islands: Wammer Island, near Dabo.[1]

28. OTOSTIGMUS BARBOURI Chamberlin.

Ent. news, 1914, **25**, p. 386, pl. 17, fig. 1–3.[1]

LOCALITY.— Dutch New Guinea: Sorong.[1]

29. OTOSTIGMUS ORIENTALIS Porat.

Bih. Svensk akad. Handl., 1876, **4**, no. 7, p. 19. Pocock, Weber's Reise, 1894, **3**, p. 312.[1] Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 478.[2]

LOCALITY.— Flores: Maumerie.[1] Halmaheira.[2]
Also known from Bombay and the Seychelles.

30. OTOSTIGMUS MOLUCCANUS Chamberlin.

Ent. news, 1914, **25**, p. 388, pl. 17, fig. 6, 7.[1]

LOCALITY.— Ternate.[1]

31. OTOSTIGMUS PUNCTIVENTER (Tömösvary).

Branchiotrema punctiventer Tömösvary, Term. füz., 1885, **9**, p. 66.
Otostigmus punctiventer Pocock, Willey's Zool. results, 1898, pt. 1, p. 61.[1] Attems, Bijdr. dierk., 1915, **20**, p. 4.[2]

LOCALITIES.— New Britain.[1] Ceram: Waigeu, Beo.[2] Dutch New Guinea: Sorong (Thomas Barbour).

32. OTOSTIGMUS ANGUSTICEPS Pocock.

Willey's Zool. results, 1898, pt. 1, p. 62.[1]

LOCALITY.— New Britain.[1]

33. OTOSTIGMUS PROPONENS, sp. nov.

TYPE.— M. C. Z. 2,166. PARATYPE.— M. C. Z. 2,167. Solomons: Fulakora, Wainoni Bay (W. M. Mann).

Color of type above dark olive, the first one and several of the last plates of reddish cast as some of the others may be laterally. First two joints of legs brownish, the other joints a lighter olive. In a paratype the legs are a lighter green.

Dorsal plates bearing numerous minute points especially in the posterior region, the points finely tipped, the surface under the microscope appearing minutely scabrous. Antennae long, composed of twenty-two articles of which only the first two are glabrous. Dorsal plates from the sixth inclusive on with complete paired sulci, those from the eleventh caudad margined. Posterior plates in front of the nineteenth with one or two very low, broad keels on each side just mesad of the margining sulcus. Last tergite with a median longitudinal depression in front of the posterior angle, this becoming shallower on anterior part of plate. Prosternal plates each with three large teeth of which the two most mesal are partially fused and the innermost bears on its mesal edge a minute fourth tooth. Paired longitudinal sulci of sternites absent or evident only across anterior border in type; in a paratype on some plates of the posterior region the sulci extend well toward the middle. Sternites under the lens showing a moderate number of laterally compressed elevations or tubercles. Last ventral plate narrowed caudad; caudal margin incurved. Coxopleural process ending in two points, with one dorsal spine and two lateral ones on caudal margin of coxopleurae. Tarsi of legs to seventh pair inclusive with two tarsal spines, others to twentieth inclusive with one spine. Femur of anal legs ventrally toward ectal side with four spines, toward inner edge with three and on mesal surface with about seven or eight, a small one at mesodistal angle above.

Length, 65 mm.

34. OTOSTIGMUS COMPLETUS, sp. nov.

TYPE.— M. C. Z. 2,109. Solomons: Auki (W. M. Mann).

General color olive, with head somewhat more brownish and legs more greenish.

Dorsal plates without trace of keels or roughening; densely marked with exceedingly fine puncta. Antennae long, composed of twenty articles of which the first two are glabrous and the third glabrous at proximal end ventrally. Dorsal plates from fifth on with complete paired sulci, those of the fourth complete excepting at middle. Tergites from eighth caudad margined. Last tergite depressed just in front of angle, the furrow not evident on anterior part of plate. Ventral plates with paired sulci deep and complete. Last ventral plate only slightly narrowed caudad, the sides being nearly parallel; caudal margin widely incurved. Coxopleural processes each with two spinous points at tip; just cephalad of these on ectal side a spinule and one farther removed at base of process, and a single dorsal spine. Femur of anal legs toward ectal side beneath with a series of four spines; toward mesal edge beneath two spines; mesal surface with five teeth, three in a more ventral series and two in the dorsal; one spine at distomesal corner above.

Length, 50 mm.

35. OTOSTIGMUS PAMUANUS, sp. nov.

TYPE.— M. C. Z. 2,112. Solomons: Pamua (W. M. Mann).

Color deep olive, the legs more greenish.

Antennae composed of twenty-four articles of which two and a third are glabrous. Dorsal plates with complete paired sulci beginning with the fifth. Tergites margined beginning with the ninth. Tergites with a rather narrow, low and flat median keel and some with one or two lateral ones on each side more or less obscurely indicated, the surface in part sparsely scabrous. Each prosternal dental plate with three large teeth of which the median and outer one are weakly incised or subdivided, the outer one in consequence showing a much smaller denticle at base on ectal side. Most ventral plates without paired sulci or these evident only at anterior border; however, a few in anterior part of posterior region have the sulci extending to middle or entirely across plate. Last ventral plate scarcely narrowed caudad, subquadrate, lateral margins weakly incurved as is also caudal margin, the corners rounded. First three pairs of legs with two tarsal spines, the others to the twentieth with one. Coxopleural processes short; with two spinous points at apex; two lateral spines, one close to apical ones, the other near middle; one dorsal spine. Femur of anal legs with numerous spines; ventrally an outer row of seven spines with several adjacent smaller spines or points; toward mesal edge on ventral surface about twelve spinules in two irregular series; mesal surface with five or six spines; one spine at distomesal angle above.

Length, 39 mm.

36. RHYSIDA KURANDANA, sp. nov.

TYPE.— M. C. Z. 2,151 Queensland: Kuranda, 2,000 ft., September, 1914 (H. L. Clark).

Head sparsely punctate. Antennae composed of eighteen articles, short, reaching only to, or but slightly beyond, the end of the fourth tergite. Dorsal plates from third segment on sulcate, those from sixth on margined. All tergites smooth, without trace of carinae or tubercles. Prosternal teeth 5 + 6, the two innermost on each side almost completely fused; the caudal limiting furrows of the dental plate forming an obtuse angle at the middle; dental plates broader than long. Ventral plates without sulci excepting for the usual short traces on anterior border. Last ventral plate obviously narrowed caudad, sides convex, the caudal margin weakly concave. Pseudopleural process short, triangular, with tip bispinous, two ventral marginal spines of which one is well towards apex. Legs from first to seventeenth with two tarsal spines, twentieth with a tarsal spine. Femur of anal legs ventrally with four denticles or spines of which three are in an oblique proximal row and one alone toward middle; in addition there are along the mesoventral side seven teeth, three pairs and a single one at end of the joint.

Length, 48 mm.

Apparently nearest to *R. subinermis* (Meinert).

37. RHYSIDA DEFECTA, sp. nov.

TYPE.— M. C. Z. 1,928. New South Wales: Southerland (W. M. Wheeler).

Color brown, with the head and two first tergites greenish; posterior legs also greenish.

Head nearly wholly smooth, the puncta being vague and scattered. Antennae consisting of twenty-one articles, the three proximal of which are naked; reaching to the seventh tergite. Dorsal plates bisulcate from the third one on, margination beginning with the seventh. Tergites all smooth, without trace of keels or tubercles. Prosternal teeth in type 4 + 5 (or 6), the two outermost on the left side being much smaller and the third tooth being also partly divided; the caudal limiting sulcus of the dental plates forming an obtuse angle at the middle, sending off a small branch on each side in a caudoectal direction; dental plate broader than long. Ventral plates without sulci excepting the short traces across anterior border. Last ventral plate with sides convex, narrowing strongly caudad from near the anterior third, caudal margin incurved. Pseudopleural process exceeding ventral plate by more than its length, distally somewhat bluntly rounded; with three apical spines, and one on lateral and one on dorsal margin; pores small and very numerous, the porigerous area much broader than the non-porigerous. Legs from the first to the sixteenth inclusive with two tarsal spines; twentieth legs each with a tarsal spine. Anal legs missing.

Length, 45 mm.

Very similar to *R. longicornis* Pocock; but distinguished from that form in having the sulci and margination of tergites begin farther forward.

38. Rhysida suvana, sp. nov.

Type.— M. C. Z. 2,026. Paratypes.— M. C. Z. 2,027. Fijis: Suva (W. M. Mann).

Head sparsely punctate, the puncta nearly absent from the most anterior region. Antennae composed of twenty articles, reaching to segment five. Tergites bisulcate from the fifth caudad; margined from the eighth caudad. Prosternal teeth 3 + 3 but the two innermost on each side almost completely fused, being separated only by a slight distal notch, rounded; caudal limiting sulcus bent forward at middle into an acute angle, the principal part of sulcus forming a very slightly obtuse angle when projected; dental plates broader than long. Anterior ventral plates with the usual sulci only across anterior border; but others with the sulci extending back to or nearly to the middle of the plate. Last ventral plate narrowed caudad, the caudal margin widely incurved. Pseudopleural processes of moderate length; each bearing three spines at tip, two lateral marginal ones well removed from apex, and one on dorsal edge. Femur of anal legs armed ventrally with an ectal longitudinal row of three spines and a single spine toward the mesal edge; mesally bearing a lower longitudinal row of three spines and an upper one of two; a single spine at the dorsocaudal angle.

Length, near 40 mm.

39. Rhysida subinermis (Meinert).

Branchiostoma nudum Kohlrausch (non Newport), Archiv naturg., 1881, **47**, p. 64.[1] Haase (non Newport), Abhandl. Mus. Dresden, 1887, **5**, p. 84.[2]
Branchiostoma subinerme Meinert, Vid. medd. Kjoben., 1886, 1884–1887, p. 11.
Rhysida subinermis Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 7.[3]

Localities.— Australia.[1] Queensland: Port Mackay, Bowen, Brisbane, Elpinton, Herberton, Malanda, Atherton, Cedar Creek, Belenden Ker, Mt. Tambourine, Glen Lamington, Colosseum,[3] Enoggera near Brisbane (W. M. Wheeler). New South Wales.[2] W. Australia: Kimberley District.[3]

40. Rhysida nuda (Newport).

Branchiostoma nudum Newport, Trans. Linn. soc. London, 1845, **19**, p. 412.[1]
Branchiostoma gymnopus Kohlrausch, Archiv naturg., 1881, **47**, p. 67.[2]
Branchiostoma gymnopus var. *ceylonicum* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 412.
Branchiostoma nuda Daday, Term. füz., 1891, **14**, p. 183.[3]
Rhysida nuda Attems, Semon's Forschungsreise, 1898, **5**, p. 508.[4] Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 459.[5]

Localities.— Queensland:[3] Port Mackay, Bowen, Brisbane,[5] Burnett District.[4] New South Wales: Paramatta.[1,5] Victoria: Elphinstone.[5] Banda Island.[2]

41. Rhysida carinulata (Haase).

Branchiostoma carinulatum Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 82.[1]
Branchiostoma carinulatum var. *australicum* Haase, *Ibid.*, p. 83.[2]
Branchiostoma carinulatum var. *efflatum* Haase, *Ibid.*, p. 83.[3]
Rhysida rugulosa Pocock, Weber's Reise, 1894, **3**, p. 314.[4]
Rhysida carinulata Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 629.[5] Kraepelin, Revis. Scolop., 1903, p. 145.[6]

Localities.— Queensland: Cape York,[2] Kuranda (H. L. Clark), Thursday Island.[3] New Guinea.[1,5] Celebes.[4,5,6]

42. Rhysida longipes (Newport).

Branchiostoma longipes Newport, Trans. Linn. soc. London, 1845, **19**, p. 411,
Branchiostoma gracile Kohlrausch, Archiv. nat., 1881, **47**, p. 66.[1]
Branchiostoma affine Kohlrausch, *Ibid.*, p. 68.

Branchiostoma longipes = var. *rotundatum* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 84.[2]

Rhysida longipes Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 630.[3] Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 478.[4] Brölemann, Records Austr. mus., 1912, **9**, p. 44.[5] Attems, Bijdr. dierk., 1915, **20**, p. 4.[6]

Localities.— Queensland: Condamine River.[5] Victoria: Melbourne.[2] Banda Island.[1] New Guinea.[3] Ternate. Halmaheira.[4] Ceram: Waigeu.[6]

43. Rhysida immarginata (Porat).

Branchiostoma immarginatum Porat, Bih. Svensk. akad. Handl., 1876, **4**, no. 7, p. 24.

Branchiostoma immarginatum var. *celebense* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 86.[1]

Localities.— Celebes.[1] Fijis: Nansori, Labasa (W. M. Mann).

44. Ethmostigmus australianus, sp. nov.

Type.— M. C. Z. 1,927. New South Wales: Southerland, September, 1914 (W. M. Wheeler).

Cephalic plate only obscurely finely punctate. Antennae composed of twenty articles of which, unlike other species of the genus, only the three first articles are wholly smooth and shining, though the fourth is hairy only distally and on the one side. Dorsal plates completely bisulcate from the sixth caudad, margined beginning with the seventh or sixth. Each prosternal plate with four teeth of which the end ones are reduced. Ventral plates bisulcate, the sulci deep over middle and fading out at ends. Last ventral plate narrowed caudad from a little behind the anterior end, the caudal margin obtusely angularly excised. Coxopleural processes exceeding the last ventral plate by more than their length, with two spines at tip, moderately close to each other, three spines laterally and four to six dorsally. Femur of anal legs ventrally with three spines in ectal row, three toward mesoventral edge, and on mesal surface with 2 +2 spines in addition to the one at the distal angle. Twentieth legs each with a tarsal spine.

Length, 33 mm.

45. Ethmostigmus waiainus, sp. nov.

Type.— M. C. Z. 1,968. Paratypes.— M. C. Z. 108, 2,113. Solomons: Wai-ai, Auki, Fulakora (W. M. Mann).

Color dark brownish green; head and first plate abruptly darker than contiguous region. Anterior and median legs fulvous, posterior ones somewhat darker; first four articles of antennae green, the others fulvous.

Nearest *E. platycephalus* (Newport) and *E. spinosus* (Newport). Antennae consisting of twenty articles; articles longer than wide. Differing from the two species mentioned in having the sulci of the sternites sharply impressed from the second segment to the twentieth. Last ventral plate with but weak traces of a median sulcus; caudal margin deeply excavated. Coxosternal plate with 3 + 3 teeth or with a stunted fourth tooth on mesal side of each series, teeth bluntly rounded, not subdivided, presenting a characteristically different appearance from the species mentioned. Paired dorsal sulci beginning on third tergite but faint on this and the fourth plate. Coxopleural processes exceeding the last ventral plate by about the length of the latter or somewhat more; two apical points and one lateral and one dorsal spine. None of legs with two tarsal spines in type; nineteenth and twentieth with none. Femur of anal legs below with two spines in outer row, two in inner, two on mesal surface and two on dorsomesal edge, the distal dorsal process with a single point.

Length, 125 mm.

46. ETHMOSTIGMUS PLATYCEPHALUS (Newport).

Heterostoma platycephala Newport, Trans. Linn. soc. London, 1845, **19**, p. 415.
Heterostoma platycephala + var. *lugubre* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 92.[1]
Heterostoma brownii + var. *gracile* Haase, *Ibid.*, p. 94.[2]
?*Heterostoma viridipes* Pocock, Ann. mag. nat. hist., 1891, ser. 6, **7**, p. 56.[3]
Heterostoma loriae Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 631.[4]
Heterostoma platycephalum Attems, Semon's Forschungsreise, 1898, **5**, p. 509.[5]
Ethmostigmus platycephalus Pocock, Willey's Zool. results, 1898, pt. 1, p. 62.[6] Pocock, Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 327.[7] Ribaut, Abhandl. Senckenb. gesellsch., 1912, **34**, 284.[8] Attems, Bijdr. dierk., 1915, **20**, p. 4.[9]

LOCALITIES.— New Guinea:[5] Jobi,[1] Dore,[1] Moroka.[4] Kei Islands: Great Kei.[8] New Britain.[2, 6] Hermit Island.[1, 2] Halmaheira.[1] Ternate.[3] Ambon.[9] Ellice Islands: Rotuma.[7] Society Islands: Tahiti.[1] Union Islands: Atafu (Duke of York) Island.[6]

47. ETHMOSTIGMUS PYGOMEGAS (Kohlrausch).

Heterostoma pygomegas Kohlrausch, Archiv naturg., 1881, **47**, p. 63.
Heterostoma rapax Attems, Semon's Forschungsreise, 1898, **5**, p. 509.[1]

LOCALITY.— New Guinea.[1]

48. Ethmostigmus granulosus Pocock.

Willey's Zool. results, 1898, pt. 1, p. 62.[1] Kraepelin, Revis. Scolop., 1903, p. 160.[2]

Localities.— New Guinea.[2] Union Islands: Atafu (Duke of York) Island.[1] New Britain.[1] Solomons: Narowol.[1]

49. Ethmostigmus rubripes (Brandt).

Scolopendra rubripes Brandt, Bull. sci. St. Petersb., 1840, p. 156.
Heterostoma sulcidens Kohlrausch, Archiv naturg., 1881, **47**, p. 59.[1]
?Heterostoma crassipes Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 632.[2]
Ethmostigmus rubripes Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 459.[3] Kraepelin, Revis. Scolop., 1903, p. 161.[4] Fauna südw. Austr., 1908, **2**, p. 108.[5] Brölemann, Records Austr. Mus., 1912, **9**, p. 44.[6] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 8.[7]

Localities.— Queensland: Cooran, Cape York,[3] Malanda, Bellenden Ker, Yanobah, Herberton, Atherton, Cedar Creek, Cooktown, Mt. Tambourine, Christman Creek, Blackall Range, Colosseum,[7] Cooktown (A. G. Mayer), Hope Island (A. G. Mayer), Condamine River,[6] Thursday Island,[4] Murray Islands, Mer (H. L. Clark). New South Wales: Paramatta, Sydney,[3] Bourke[6] Wilcannia.[6] S. Australia: Adelaide.[3] W. Australia: Swan River, Subiaco, Wooroloo, Dongarra, Boorabbin, Shark's Bay,[5] Kimberley District.[7] Northern Territory: Port Essington,[3] Fitzroy Island, Baudin Island.[3] New Guinea: Moroka.[2] Dutch New Guinea (Thomas Barbour). Solomons.[6] Australia.[1]

50. Ethmostigmus cribrifer (Gervais).

Scolopendra cribrifer Gervais, Insect. Apt., 1847, **4**, p. 248.
Heterostoma cribriferum + var. *robustum* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 93.[1]
Heterostoma cribriferum Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 631.[2] Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 478.[3]

Localities.— New Guinea, Jobi,[1] Mafoor[1] Island, Rubi.[1] Ceram:[1] Wahaai (Thomas Barbour). Halmaheira.[1, 2] Gani (Thomas Barbour). Ternate,[1, 3] Amboina.[1] Batjan. Oba.[3] Kei Islands.[1] Pelew Islands.[1]

51. ETHMOSTIGMUS VENENOSUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 478. Kraepelin, Revis. Scolop., 1903, p. 159.[1]

LOCALITIES.— Celebes.[1] Halmaheira.[1]

SCOLOPENDRIDAE.

52. ASANADA BREVICORNIS Meinert.

Proc. Amer. philos. soc., 1886, **23**, p. 189.

Asanada socotrana Pocock, Bull. Liverpool mus., 1899, **2**, p. 9.
Asanada brevicornis Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 627.[1]

LOCALITY.— New Guinea: Moroka, Hughibagu.[1]

53. CUPIPES PAPUANUS Attems.

Zool. jahrb. Syst., 1914, **37**, p. 381.[1]

LOCALITY.— Dutch New Guinea.[1]

54. CUPIPES AMPHIEURYS Kohlrausch.

Archiv naturg., 1881, **47**, p. 79.[1]

Cupipes quadrisulcatus Meinert, Proc. Amer. philos. soc., 1886, **23**, p. 187.[2]
Cupipes amphieurys Pocock, Willey's Zool. results, 1898, pt. I, p. 61.[3]

LOCALITIES.— Caroline Islands: Ponape.[1, 2] New Britain.[3]

55. CUPIPES NEOCALEDONICUS Kraepelin.

Revis. Scolop., 1903, p. 180.[1]

LOCALITY.— New Caledonia.[1]

56. CUPIPES INERMIS Kraepelin.

Arkiv zool., 1916, **10**, no. 2, p. 9, fig. 3, 4, 4a.[1]

LOCALITY.— Queensland: Cape York.[1]

57. CUPIPES IMPRESSUS Porat.

Bih. Svensk. akad. Handl., 1876, **4**, no. 7, p. 15.

?*Cupipes armatus* Daday, Term. füz., 1891, **14**, 144.[1]
?*Cupipes impressus* Ribaut, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 284.[2]

LOCALITIES.— New South Wales.[1] Aru Islands: Kobrur Island, Seltutti.[2]

This is primarily a West Indian and American species, and the identity with it of the forms here referred to is doubtful. Daday's species may be identical with Kraepelin's *C. neocaledonicus* in which case it would have precedence. Ribaut points out various minor differences of his single specimen from the Aru Islands from typical *C. impressus.*

58. CUPIPES PROPULSUS, sp. nov.

TYPE.— M. C. Z. 2,108. PARATYPES.— M. C. Z. 2,103, 2,104, 2,110, 2,114, 2,116. Solomons: Bulima, Wainoni Bay, Ngi, Auki, Fulakora, Tulagi, Malaita (interior) (W. M. Mann).

Color olive, with head more brown.

Cephalic plate finely punctate; with two sulci diverging forward and extending beyond middle, nearly attaining level of caudal edge of eye group; basal plates distinct. Antennae composed of seventeen articles of which the first five are glabrous and the sixth less densely hairy. Tergites margined from the ninth or tenth caudad; paired sulci distinct from the first to the twentieth; a median keel distinct though low from the third caudad, weaker on the second, a very obscure lateral keel also evident on each side of many of the plates. Each prosternal dental plate a little wider than long, with three teeth or the most mesal of these showing a slight tendency to divide. Prosternal plate with two fine sulci uniting at an angle in front and crossed by a transverse line which gives off branches. Ventral plates from the second to the twentieth with two complete longitudinal sulci. Last ventral plate strongly narrowed caudad; caudal margin very weakly incurved. Legs without tarsal spines. Anal legs enlarged as usual; femur with a single spine at distomesal angle above and one on mesodorsal edge between the distal one and the middle of length; ventral surface with four spinules in two widely separated rows of two each and mesal surface with three of which one, larger than the others, is at the distal edge. Coxopleurae truncate behind, not at all produced; each with a single spinule at distomesal angle, otherwise unarmed.

Length, 38 mm.

59. COLOBOPLEURUS INOPINATUS Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 109.[1]

LOCALITY.— W. Australia: Karrakatta, near Perth.[1]

This is the only non-African representative of the genus thus far known.

60. CORMOCEPHALUS LAMPRUS, sp. nov.

TYPE.— M. C. Z. No. 1,923. PARATYPE.— M. C. Z. 1,924. New South Wales: near Uralla, Salisbury Court (W. M. Wheeler).

General color brown, the head and first tergite darker, or in one specimen somewhat chestnut with anterior border of first and second tergite dusky; antennae and distal joints of the more posterior legs green.

Cephalic plate finely and not deeply punctate; two fine sulci diverging forward from caudal end but not reaching to middle. Antennae composed of sixteen articles; first four with sparse short hairs, then more dense from fifth distad. First dorsal plate overlapping the head in the middle, revealing basal plate at ends, without sulci. Complete sulci beginning on the second tergite. Margination of tergites not present until the seventeenth tergite. Last plate without a median sulcus. Prosternum with a fine and sometimes branched transverse sulcus near the anterior third; teeth 4 + 4, the three inner ones on each side basally fused, the outermost one widely removed. Ventral plates from second to twentieth with two complete longitudinal sulci. Last ventral plate strongly narrowed caudad, caudal margin incurved, corners rounded, three longitudinal impressed lines. Anal legs with femur below having two spines in the outer series, two or three in the mesoventral series, two above, and two at the caudal angle above.

Length, near 50 mm.

61. CORMOCEPHALUS ESULCATUS Pocock.

Ann. mag. nat. hist., 1901, ser. 7, 8, p. 458.[1]

LOCALITY.— Victoria: Melbourne, Fern Tree Gully.[1] New South Wales: Wentworth (W. M. Mann).

62. CORMOCEPHALUS LAEVIPES Pocock.

Ann. mag. nat. hist., 1891, ser. 6, **7**, p. 67.[1]

LOCALITY.— Lord Howe Island.[1]

63. CORMOCEPHALUS AURANTIIPES (Newport).

Scolopendra aurantiipes Newport, Ann. mag. nat. hist., 1844, **13**, p. 99.[1]
Cormocephalus gracilis Kohlrausch, Archiv naturg., 1881, **47**, p. 86.[2]
Cormocephalus aurantiipes + var. *spinosus* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 57.[3]
Cormocephalus aurantiipes Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 455.[4] Kraepelin, Fauna südw. Austr., 1908, **2**, p. 116.[5] Brölemann, Records Austr. mus., 1912, **9**, p. 47.[6] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 11.[7]

LOCALITIES.— Australia.[2] Queensland: Gayndah,[4] Atherton, Colosseum, Cape York.[7] New South Wales: Sydney,[4] Paramatta,[6] Port Stephens.[6] Victoria: Bendigo.[4] S. Australia: Adelaide.[3, 4, 7] Northern Territory: Port Essington.[1] W. Australia: Albany, Cranbrook,[5] Perth,[4, 5, 7] Champion Bay (Geraldton) York, Beverley, Swan River, Darling Range, Toowoomba.[5]

63a. CORMOCEPHALUS AURANTIIPES var. MARGINATUS Porat.

Cormocephalus marginatus Porat, Bih. Svensk. akad. Handl., 1876, **4**, no. 7, p. 16.[1]
Cormocephalus aurantiipes marginatus Brölemann, Records Austr. mus., 1912, **9**, p. 49.[2]

LOCALITIES.— Australia.[1] New South Wales: Narrabri.[2]

63b. CORMOCEPHALUS AURANTIIPES SULCATUS Brölemann.

Records Austr. mus., 1912, **9**, p. 49.[1]

LOCALITIES.— New South Wales: Bourke, Wilcannia.[1]

64. CORMOCEPHALUS PUSTULATUS Kraepelin.

Revis. Scolop., 1903, p. 189, p. 127.[1]

LOCALITY.— New Caledonia.[1]

65. CORMOCEPHALUS RUBRICEPS (Newport).

Scolopendra rubriceps Newport, Ann. mag. nat. hist., 1844, **13**, p. 99.
Cormocephalus purpureus Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 127.[1]
Cormocephalus rubriceps Pocock, *Ibid.*, p. 128.[2] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 11.[3]

LOCALITIES.—Australia.[1] Queensland: Atherton, Herberton.[3] New Zealand:[1] Maua Island,[2] Day's Bay (near Wellington), Taumarunni, 1914 (W. M. Wheeler). Loyalty Islands.

66. CORMOCEPHALUS BREVISPINATUS L. Koch.

Verh. Zool. bot. gesellsch. Wien, 1867, **17**, p. 248.[1] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 12.[2]

?*Cormocephalus exiguus* Meinert, Vid. medd. Kjoben, 1886, 1884–1887, p. 132.[3]

LOCALITIES.— Australia.[1] Queensland: Rockhampton, Brisbane, Mt. Tambourine, Christmas Creek, Blackall Range.[2] New South Wales: Sydney.[3]

67. CORMOCEPHALUS DISTINGUENDUS Haase.

Abhandl. Mus. Dresden, 1887, **5**, p. 61.[1] Attems, Semon's Forschungsreise, 1898, **5**, p. 508.[2] Kraepelin, Fauna südw. Austr. 1908, **2**, p. 117.[3]

Cormocephalus brevispinatus distinguendus Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 12.[4]

LOCALITIES.— S. Australia: Adelaide.[1,4] Queensland: Burnett District.[2] W. Australia: Shark's Bay, Champion Bay, Dongarra.[3]

68. CORMOCEPHALUS WESTWOODI (Newport).

Scolopendra westwoodi Newport, Ann. mag. nat. hist., 1844, **13**, p. 100.
Scolopendra puncticeps Gervais, Insect. Apt., 1847, **4**, p. 273.[1]
Cormocephalus lanatipes Kohlrausch, Archiv naturg., 1881, **47**, p. 85.[2]
Cormocephalus westwoodi Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 457.[3] Brölemann, Records Austr. mus., 1912, **9**, p. 52.[4] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 12.[5]

LOCALITIES.— Queensland: Gayndah,[2,3] Mt. Tambourine, Glen Lanington, Colosseum, Yandrina, Blackall Range, Atherton (near

Cairns).[5] New South Wales: Sydney, Paramatta, Ashfield, Bondi, Rose Bay,[3] Smithfield.[4] Tasmania:[1,4] Mt. Rumsey, Hobart,[3] Wedge Bay (G. H. Hardy), Maria Island (G. H. Hardy).

68a. CORMOCEPHALUS WESTWOODI var. FOECUNDUS Newport.

Cormocephalus foecundus Newport, Trans. Linn. soc. London, 1845, **19**, p. 421. Kohlrausch, Archiv naturg., 1881, **47**, p. 86.[1] Pocock, Ann. mag. nat. hist., 1893, ser. 6, **2**, p. 129.[2]

Cormocephalus westwoodi var. *foecundus* Kraepelin, Revis. Scolop., 1903, p. 201.[3] Arkiv zool., 1916, **10**, no. 2, p. 13.[4]

LOCALITIES.— Australia.[2] Queensland: Rockhampton,[2] Mt. Tambourine, Christmas Creek, Blackall Range, Malanda.[4] New South Wales: Sydney, Paramatta.[1] Victoria: Lake Elphinstone.[1] Tasmania.[2,3]

69. CORMOCEPHALUS STRIGOSUS Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 120, pl. 12, fig. 15;[1] Arkiv zool., 1916, **10**, no. 2, p. 15.[2]

LOCALITIES.— W. Australia: Perth and environs (*e. g.* Lion Mill, Gooseberry Hill, Wooroloo, Pickering Brook, York), Jarrahdale, Moora, Arrino, Northampton, Yalgoo, Day Dawn, Lake Austin;[1] S. Australia: Adelaide.[2]

70. CORMOCEPHALUS VIOLASCENS (Gervais).

Scolopendra violascens Gervais, Insect. Apt., 1847, **4**, p. 275.

Cormocephalus violaceus Newport (*non* Fabr.), Trans. Linn. soc. London, 1845, **19**, p. 424 [1]; Hutton, Trans. N. Z. inst., 1877, **10**, p. 289.[3]

?*Cormocephalus pallipes* Newport, *Op. cit.*, p. 424.[2]

Cormocephalus huttoni Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 128.[4]

Cormocephalus violascens Pocock, Willey's Zool. results, 1898, pt. 1, p. 60.[5]

Cormocephalus westwoodi huttoni Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 13.[6]

LOCALITIES.— Queensland: Gayndah, Rockhampton,[5] Mt. Tambourine, Herberton, Malanda, Cedar Creek.[6] Victoria. New Zealand:[1,2,3] Wellington [4] (W. M. Wheeler), Day's Bay (W. M. Wheeler), Waikonaito.[4] Tasmania.[2] Loyalty Islands: Lifu, Uvea.[5]

71. CORMOCEPHALUS TURNERI Pocock.

Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 456.[1] Kraepelin, Fauna südw., Austr., 1908, **2**, p. 114.[2]

LOCALITIES.— W. Australia: Perth,[1, 2] Harvey, Shark's Bay (Edel Land, Tamala), Boorabbin, Kalgoorlie, Mt. Robinson, Champion Bay.[2]

71a. CORMOCEPHALUS TURNERI YALGOOENSIS Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 115.[1]

LOCALITY.— W. Australia: Yalgoo, east of Champion Bay.[1]

72. CORMOCEPHALUS MICHAELSENI Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 113, pl. 12, fig. 13.[1]

LOCALITIES.— W. Australia: Albany, Bridgetown, Collie.[1]

73. CORMOCEPHALUS TRICUSPIS Kraepelin.

Arkiv zool., 1916, **10**, no. 2, p. 14, fig. 5.[1]

LOCALITY.— Queensland: Atherton.[1]

74. CORMOCEPHALUS HARTMEYERI Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 119, pl. 12, fig. 16.[1]

LOCALITIES.— W. Australia: Albany, Torbay, Cranbrook, Broome Hill, Boyanup, Donnybrook, Bridgetown, Bunburry, Collie, Harvey, Pinjarra, Jarrahdale, Perth, Guildford.[1]

75. HEMICORMOCEPHALUS NOVAE HOLLANDIAE Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 122, pl. 12, fig. 17.[1]

LOCALITY.— W. Australia: Subiaco, Fremantle.[1]

76. SCOLOPENDRA MORSITANS Linné.

Syst. nat., ed. 10, 1758, **1**, p. 638. Kohlrausch, Archiv naturg., 1881, **47**, p. 104, 109.[1] Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 625.[3] Pocock, Weber's Reise, 1894, **3**, p. 312.[4] Attems, Abhandl. Senckenb.

gesellsch., 1897, **23**, p. 477.[5] Semon's Forschungsreise, 1898, **5**, p. 508.[6] Schnee, Zool. jahrb. Syst., 1904, **20**, p. 406.[8] Kraepelin, Fauna südw. Austr., 1908, **2**, p. 123.[9] Brölemann, Records Austr. mus., 1912, **9**, p. 54.[10] Ribaut, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 284.[11]

Scolopendra morsicans Pocock, Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 325, 327.[7]

Scolopendra morsitans + var. *procera* + var. *sulcipes* Haase, Abhandl. mus. Dresden, 1887, **5**, p. 53, 54.[2]

Localities.— Queensland: Gayndah,[1] Burnett District,[6] Rockhampton;[1,2] New South Wales: Sydney,[1] Bourke, Wilcannia.[10] W. Australia: Shark's Bay (Baba Head, Tamala), Champion Bay (Northampton, Eradu), Moora, Day Dawn, Yalgoo, Coolgardie, Kalgoorlie.[9] New Zealand: Lyell Bay (W. M. Wheeler). Flores: Endeh, Maumerie, Sikka.[4] Saleyer.[4] Timor.[2] Halmaheira.[3,4] Amboina.[3] Ternate.[4] Kei Islands:[3] Great Kei, Little Kei.[11] New Guinea.[2,3] Dutch New Guinea (Thomas Barbour). Aru Islands: Terangan.[11] Banda Island.[1] Hervey Islands: Rarotonga,[1] Vau Vau, Eua.[1] Samoa:[2] Apia.[3] Celebes.[1,4] Fijis: Viti;[1] Nacula, Yarawa Group, Hosea, Lau, Yanuia, Vatoa, Sava Kasa, Viti Levu (W. M. Mann). Ellice Islands: Funafuti, Rotuma.[7] Carolines: Ponape.[1] Marshalls.[5,11] Society Island.[1] Paumotus.[1]

A species occurring widely in all tropicel and subtropical regions but most abundant in the Asiatic and African regions.

77. Scolopendra subspinipes Leach.

Trans. Linn. soc. London, **11**, p. 383. Kohlrausch, Archiv naturg., 1881, **47**, p. 96, 99.[2] Latzel, Bull. Soc. zool. France, 1892, **17**, p. 185.[4] Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 623.[6] Pocock, Weber's Reise, 1894, **3**, p. 312.[5] Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 477.[7] Zool. jahrb. Syst., 1903, **18**, p. 81.[8] Ribaut, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 284.[9] Attems, Zool. jahrb. Syst., 1914, **37**, p. 380.[10]

Scolopendra repens Wood, Proc. Acad. nat. sci. Phil., 1861, p. 31.[1]

Scolopendra meyeri Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 49.[3]

Scolopendra polyodonta Daday, Math. term. Ertes. magyar akad., 1893, **12**, p. 5.

Localities.— New Zealand: Wellington (W. M. Wheeler). New Guinea:[3,7] Dutch New Guinea: Manokwari, Sorong (Thomas Barbour); Sermowai River, Javna, Humboldt Bay, Zoutbron, Kaiserin Augusta River, Hauptbiwok,[10] Andai.[6] Kei Islands: Great Kei.[9]

Aru Islands: Wammer Island, Meriri.[9] Halmaheira.[6] Gimia.[5] Flores: Sikka, Kotting.[6] Celebes: Minahassa.[7] Hervey Islands: Rarotonga, Avarua (W. M. Wheeler). Hawaiian Islands:[2] Oahu[1, 8, 10] (William Waddoups). Society Islands: Tahiti[2, 4] (Albatross 1899 Exped.). Samoa: Upolu (W. McM. Woodworth). Paumotus: Fakarava (Albatross 1899 Exped.). Fijis: Suva (J. P. Jeppson), Munia, Suva Viti, Levu, Ono Lau, Levuka, Ovalau (W. M. Mann).

This species, while occurring throughout the warmer regions of the world, excepting in the Mediterranean region where it is replaced by the common European *S. cingulata*, is most abundant by far in the Oriental region. It is also abundant on the Pacific islands.

77a. Scolopendra subspinipes var. mutilans L. Koch.

Scolopendra mutilans Koch, Verh. Zool. bot. gesellsch. Wien, 1878, **27**, p. 791. Attems, Semon's Forschungsreise, 1898, **5**, p. 507.[1]

Localities.— Queensland: Kuranda (H. L. Clark), Murray Islands (H. L. Clark). New Guinea.[1]

78. Scolopendra gracillima Attems.

Semon's Forschungsreise, 1898, **5**, p. 508, pl. 41, fig. 1. Chamberlin, Ent. news, 1914, **25**, p. 390.[1]

Locality.— Ceram: Wahaai.[1]
Previously known from Java.

79. Scolopendra laeta Haase.

Abhandl. Mus. Dresden, 1887, **5**, p. 51.[1] Brölemann, Records Austr. mus., 1912, **9**, p. 60.[3] Kraepelin, Arkiv zool., 1916, **10**, no. 2, p. 16.[3]

Rhombocephalus laetus Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 454.[2]

Localities.— Australia.[1] New South Wales: Penrith.[3] W. Australia: Perth,[2] Broome Hill, Streeters Station, Kimberley.[3]

79a. Scolopendra laeta var. viridis Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 126.[1]

Locality.— W. Australia: Kooinbana Bay, Perth.[1]

79b. SCOLOPENDRA LAETA var. FASCIATA Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 126.[1]

LOCALITY.— W. Australia: Shark's Bay.[1]

79c. SCOLOPENDRA LAETA var. FLAVIPES Kraepelin.

Fauna südw. Austr., 1908, **2**, p. 125.[1]

LOCALITY.— W. Australia: Yalgoo.[1]

80. SCOLOPENDRA METUENDA Pocock.

Ann. mag. nat. hist., 1895, ser. 6, **16**, p. 423.[1] Pocock, Willey's Zool. results, 1898, pt. 1, p. 60.[2] Brölemann, Records Austr. mus., 1912, **9**, p. 53.[3]

LOCALITIES.— New Guinea:[1, 3] Narowal. New Georgia.[2]

81. SCOLOPENDRA (?) COERULEOVIRIDIS Murray.

Economic ent. Aptera, 1887, p. 27.[1]

LOCALITY.— Australia.[1]
A species of doubtful identity, probably belonging to Cormocephalus rather than to Scolopendra.

82. ARTHRORHABDUS MJÖBERGI Kraepelin.

Arkiv zool., 1916, **10**, no. 2, p. 17, fig. 6–9.[1]

LOCALITY.— W. Australia: Kimberley District.[1]

GEOPHILOMORPHA.

AZYGETHIDAE, fam. nov.

Like the Gonibregmatidae in having the labrum a single piece convexly protruding and dentate or pectinate along its entire width. Fulcrum of labrum a simple unbranched bar. Mandibles with a single pectinate lamella. Coxae of first maxillae separated. Last pediferous segment with coxae distinct from the pleurae, of nearly ordinary form, and bearing no pores; the pleural plates of the segment normal and a spiracle present.

AZYGETHUS, gen. nov.

Differing from the known genera of Gonibregmatidae in having the coxae of the first maxillae wholly discrete; both branches set off by sutures; lappets present (subcaudal). Coxae of second maxillae united at the middle; claw of palpus pectinate. Labrum rather long from side to side, bulging caudad evenly convexly at middle, densely finely toothed or pectinate throughout its width. Antennae short, strongly flattened, narrowing distad. A single row of suprascutella, none anteriorly. No ventral pores. Last coxae normally not at all enlarged, without pores. A small spiracle present on this segment. Anal legs seven-jointed, without claws.

GENOTYPE.— *Azygethus atopus*, sp. nov.

83. AZYGETHUS ATOPUS, sp. nov.

TYPE.— M. C. Z. 1,915. PARATYPE.— M. C. Z. 1,916. Fijis: Levuka (W. M. Mann).

In general color fulvous, a geminate dark stripe showing along the dorsum. Head and antennae light ferruginous.

Head short and broad, the anterior portion triangular, the apical angle being a little greater than a right angle.

Prehensors covered by cephalic plate excepting a little at base.

No prebasal plate.

Basal plate very wide, of equal width anteriorly and posteriorly, three and a third times wider than median length.

Prehensors and prosternum short, wholly unarmed, no chitinous lines.

Dorsal plates smooth, not distinctly sulcate.

Spiracles large, subelliptic or oblong, obliquely placed, the last one abruptly smaller and subcircular.

A single row of suprascutella excepting in anterior region and last segment.

Last ventral plate large, unmodified, trapeziform or somewhat pentagonal, the anterior margin forming a low angle at middle.

No anal pores.

Pairs of legs, seventy-one.

Length, 51 mm.

GONIBREGMATIDAE.

84. GONIBREGMATUS PLURIMIPES, sp. nov.

TYPE.— M. C. Z. 1,988. Fijis: Lomati (W. M. Mann).

Color, fulvous.

Antennae proximally rather broad, flattened, gradually narrowing distad to middle, beyond which nearly uniform and cylindrical.

Prebasal plate exposed.

Basal plate broader than cephalic, bent somewhat forwards at ends.

Claws of prehensors when closed extending to end of first antennal article.

Spiracles vertical, slit-like.

Last ventral plate wider than long. Coxopleurae as usual.

Anal legs very obviously exceeding the penult in length.

Pairs of legs, one hundred and ninety-one.

This species is more slender than *A. atopus* and has a larger number of pairs of legs. Aside from the family characters it is distinguishable in having the prescutum of the last leg-bearing segment separated off only by a weak sulcus, the fusion being nearly complete; sulcus bowed caudad as usual, rounded at middle. Also in having prebasal plate exposed, no frontal suture, and anal legs longer than penult.

85. GONIBREGMATUS FIJIANUS, sp. nov.

TYPE.— M. C. Z. 1,908. PARATYPES.— M. C. Z., 1,909, 1,958. Fijis: Nadarivatu, Vanua Ava (W. M. Mann).

General color fulvous throughout.

Head clearly broader than long (43:38); anterior border and posterior border subtriangular, the anterior margin mesally more rounded. Frontal suture present; also a suture across the caudal border. Clypeal region with a broad median longitudinal ridge; labrum strongly convex about caudal end of ridge.

First articles of antennae flattened, broad, narrowing distad; distal article distally blunt.

Last ventral plate wider than long, posteriorly truncate, anteriorly convex.

Anal legs small, not exceeding the penult in length, last four articles essentially equal in length. Prescutum of last leg-bearing segment separated by a deep sulcus forming an obtuse angle with apex caudad.

Segments near one hundred and seventy-seven.

Length of type, near 150 mm.

86. GONIBREGMATUS ANGUINUS Pocock.

Willey's Zool. results, 1898, pt. 1, p. 65, pl. 6, fig. 1.[1]

LOCALITY.— New Britain.[1]

87. GONIBREGMATUS INSULARIS Pocock.

Weber's Reise, 1894, **3**, p. 318, pl. 19, fig. 9, 9b.[1]

LOCALITY.— Saleyer.[1]

TUOBA, gen. nov.

Labrum of one piece, bowed convexly as in Gonibregmatus but the teeth coarser and shorter, some of the median ones darker and more strongly chitinous than the others. First maxillae with outer branch or palpus distinct and well developed, biarticulate, with no lappets; coxae fused; inner branches of good size, not set off by suture. Coxae of second maxillae united, claws smooth. Antennae filiform. Prosternum with chitinous lines; claws short, not extending beyond anterior margin of head. No frontal suture. Prebasal plate not exposed. Dorsal plates bisulcate. No suprascutella. Last ventral plate wide. Coxopleural pores small, of moderate number. Anal legs composed of six joints beyond coxopleurae, armed with a claw.

GENOTYPE.— *T. curticeps*, sp. nov.

88. TUOBA CURTICEPS, sp. nov.

TYPE.— M. C. Z. 2,166. PARATYPE.— M. C. Z. 2,167. Solomons: Pamua, Wainoni Bay (W. M. Mann).

Color yellowish to light ferruginous.

Cephalic plate short, as wide as long, sides only weakly curved; slightly narrower caudally than anteriorly; anterior margin very obtusely angular, each side straight; caudal margin more slightly angulate at middle.

Teeth of labrum coarser and correspondingly fewer than in other gonibregmatids; five teeth of median region dark, more strongly chitinized than the lateral ones.

Basal plate relatively short, posteriorly much exceeding the cephalic plate in width.

Chitinous lines of prosternum fine.

Claws of prehensors when closed nearly on a level with anterior margin of head. Each claw armed at base with a minute denticle, the other joints and the prosternum unarmed.

Spiracles all circular, small, the first larger than the second and the latter a little larger than the third.

Dorsal plates deeply bisulcate.

Ventral plates with a median longitudinal impression. Ventral pores in a band across caudal border. Last ventral plate very wide, strongly narrowed caudad, the caudal margin straight.

Anal legs of male moderately crassate proximally but tarsal joints slender.

Pairs of legs, in male forty-seven, in female forty-nine.

Length, 21 mm.

SCHENDYLIDAE.

89. ADENOSCHENDYLA FIJIENSIS, sp. nov.

TYPE.— M. C. Z. 1,959. PARATYPE.— M. C. Z. 2,160. Fijis: Vanua Ava (W. M. Mann).

Fulvous, head slightly darker, of very weak chestnut tinge.

Cephalic plate subquadrate, angles rounded, sides a little convex, caudal margin straight, anterior convex or subtriangular; only near once and a fourth as long as wide (9: 16); no frontal suture.

Antennae long, terete; last article about equalling the two preceding.

Labrum with near twenty-six teeth of which the lateral are less chitinous and more finely tipped, the median ones (ten in number) stout and dentiform. Divisions of dental plate of mandible apparently simple.

Prebasal plate not exposed.

Basal plate trapeziform, the exposed part three and a half times wider than long; measured from edge of cephalic plate to caudal edge overlapped by first tergite, about 2.7 times wider than long.

Prehensors rather weak, not attaining front margin of head, wholly unarmed.

Prosternum also unarmed; without chitinous lines.

Dorsal plates bisulcate. Last dorsal plate broad, shield-shaped.

Spiracles circular; first much larger than the second, the others decreasing gradually caudad.

Anterior ventral plates excavated in front, with a triangular peg from caudal margin of preceding plate fitting into the excavation, the processes getting smaller in going caudad. Last ventral plate broad, narrowed caudad, caudal margin mesally emarginate.

Ventral pores on the posterior middle part of the plate in a small subcircular or subelliptic area.

Pleural pores in two large pits on each side at the edge of the plate.

Anal legs composed of six articles beyond coxopleurae, joints long and slender; no claws.

Pairs of legs, fifty-nine to sixty-three.

Length, 50 mm.

This species is like the Brazilian *A. plusiodonta* (Attems) and unlike all other species in not having the prebasal plate exposed, but differs from that species in the simpler divisions of the dental plate, these not being dentate, the shorter prehensors, greater number of legs and other features. All the previously known species were from South America and the West Indies.

90. EUCRATONYX HAMATUS Pocock.

Willey's Zool. results, 1898, pt. 1, p. 66, pl. 6, fig. 2c.[1]

LOCALITY.— New Britain.[1]

BALLOPHILIDAE.

91. BALLOPHILUS AUSTRALIAE, sp. nov.

TYPE.— M. C. Z. 2,168. Queensland: Kuranda 2,000 ft., September, 1914 (H. L. Clark).

Unlike the type-species of Ballophilus, the Liberian *B. clavicornis*, which is deep violet or almost black in color, the present one is bright ferruginous, in life probably more red like various species of Linotaenia, though because of the readiness with which violet is lost in alcohol in various chilopods, this pigment may be present in this species in life.

Head appearing much like that of a Linotaenia; with no frontal suture.

Antennae moderate, clavate, the articles beyond the eighth being thickened; geniculate as usual.

Prebasal plate a little exposed, more on each side of middle than at middle.

Claws of prehensoral feet not reaching anterior margin of head. All joints unarmed. Basal plate broad, widest anteriorly. Anterior margin of prosternum concavely or subangularly excavated.

Labrum serrate, processes pale, large, somewhat irregular.

Body constricted a little ways back of the head in the usual manner; from there widening strongly to the posterior third of length and then again strongly attenuated caudad. The anterior region of the body appears extremely slender in comparison with the middle region.

Dorsal plates crossed longitudinally by many weak sulci between which they are elevated and roughened, and in part somewhat scabrous.

Ventral pores much more numerous than in *B. clavicornis*, densely arranged in an elevated, more strongly chitinous, transversely elliptic or oblong area on the posterior portion of plates; present on all plates from the second to the antepenult inclusive.

All spiracles small, circular.

Last ventral plate moderately wide, narrowed caudad.

Coxopleurae of anal legs much thickened; each bearing two pits opening at and lying partly beneath the edge of the ventral plate. Anal legs (male) strongly crassate but not clavate as in *B. clavicornis*, the proximal articles being thickest. No claw present, this being replaced with a slight membranous point. Six articles distad of coxopleura. Densely shortly pilose. Other legs not much differing in different regions of body, all rather slender.

Anal pores present, minute.

Pairs of legs, seventy-five.

Length, 38 mm.

92. BALLOPHILUS FIJIENSIS, sp. nov.

TYPE.— M. C. Z. 1,910. PARATYPES.— M. C. Z. 1,911. Fijis: Nadarivata (W. M. Mann).

Brown above, but laterally and ventrally shows a distinctly greenish tinge, the pore areas very dark, deep brown or blackish.

Head of usual general form, wider near middle and narrower caudally than in *B. australiae.*

Labrum with fewer and weaker serrations than in that species, in large part appearing smooth. Dentate plate of mandibles with five teeth.

Antennae of usual general clavate and geniculate form; last article longer than the two preceding together but shorter than the three preceding.

Prebasal plate distinctly exposed.

Basal plate nearly three times wider than long, angularly extended a little forward at middle.

Last ventral plate equal in length and breadth, narrowed caudad.

Anal legs strongly crassate as usual, somewhat clavate in male.

Coxopleural pores large, only inner edges covered by ventral plate.

Pairs of legs, eighty-one to ninety-one.

Length, up to 52 mm.

93. BALLOPHILUS PAUCIPES, sp. nov.

TYPE.— M. C. Z. 1,912. Fijis: Nadarivatu (W. M. Mann).

Dark brown in color above, paler at anterior and posterior ends, the ventral pore areas deeper in color; a greenish pigment, from deeper tissue, evident in a certain light.

This species is readily separable from the other species through its smaller size, much fewer pairs of legs and in not having a prebasal lamina evident. The antennae are shorter, distally broader in proportion to length. Coxopleural pores almost wholly covered by last ventral plate which is of usual general form. Anal legs short and very thick.

Pairs of legs, fifty-five.

Length, 16 mm.

ORYIDAE.

94. ORPHNAEUS BREVILABIATUS (Newport).

Geophilus brevilabiatus Newport, Trans. Linn. soc. London, 1844, **19**, p. 436.

Orphnaeus brevilabiatus Pocock, Weber's Reise, 1894, **3**, p. 317.[1] Attems, Zool. jahrb. Syst., 1903, **18**, p. 201.[3] Attems, Fauna südw. Austral., 1911, **3**, p. 154.[4] Ribaut, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 284.[5]

Orphnaeus phosphoreus Pocock (an Linne?), Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 325.[2]

LOCALITIES.— W. Australia: Helen River, Gooseberry Hill.[4] Celebes: Tete-adji.[1] Flores: Maumerie.[1] Kei Islands: Great Kei.[5] Solomons. Ellice Islands: Funafuti.[2] Marshalls: Ebon Island (L. B. Snow, 1877). Fijis: Nansori, Vanua Ava, Somo Somo, Saiaro, Vunisia (W. M. Mann). Aru Islands: Kabroor Island, Terangan.[5] Society Islands.[3] Hawaiian Islands.[3]

GEOPHILIDAE.

ZELANION, gen. nov.

This genus agrees with those in which a clypeal area is present and marked off clearly into numerous small polygonal areas, the polygonal areas elsewhere large and distinct. Median piece of labrum distinct, small, with few stout teeth (three in the genotype). The first maxillae have the outer branch biarticulate with the second greatly exceeding the first in length, the first article of branch with a scarcely detectable rudimentary lappet; coxa without lappet. Second maxillae with coxae separated by suture at middle, merely united by a membranous isthmus; claw of palpus long and stout, smooth, undivided. Prosternum without chitinous lines, anteriorly armed. Femuroid and claw of prehensors armed; prehensors extending much beyond the cephalic plate. No ventral pores. Last ventral plate narrow, (Zelanion *sens. str.*) or broad (Zelanoides, subgen. nov.) Coxopleural pores numerous, small, above and below (Zelanion *sens. str.*). Anal legs with a claw.

GENOTYPE.— *Z. dux*, sp. nov.

Differing from Steneurytion Attem in having the clypeal area marked off into distinct polygonal areas, and from the African Sepedonophilus in lacking processes from the inner angles of the second joints of the second maxillae.

95. ZELANION DUX, sp. nov.

TYPE.— M. C. Z. 1,901. PARATYPES.— M. C. Z. 1,902, 2,052. New Zealand: Plummerton, Day's Bay near Wellington, August, 1914 (W. M. Mann).

General color fulvous of ferruginous cast, the ferruginous deeper anteriorly Head and prosternum deep ferruginous or somewhat chestnut.

Head much longer than wide; sides convex, over middle of length more or less flattened. Frontal suture present, weak.

Last article of antennae shorter than the two preceding taken together.

The cephalic plate extends much over the basal plate which, however, is left more exposed at the sides; the basal plate is more than eight times wider than the length of the exposed area at the middle.

The claws of the prehensorial feet when closed extend much beyond the front margin of the head, in fact, the distal end of the femuroid lying well beyond the anterior end of the cephalic plate. Claws stout, curved, the inner edge crenulate, armed at base with a stout, long, black tooth. Second and third articles unarmed. Femuroid armed within a little caudad of distal end with a stout, bluntly rounded tooth.

Prosternum armed in front with two moderately long conical teeth.

First legs much shorter and more slender than the second.

Spiracles all circular, the first much larger than the second.

Last ventral plate narrow, decidedly longer than wide; sides straight, moderately converging caudad; caudal margin slightly convex.

Coxopleural pores small, moderately numerous but not dense, some concealed under the edge of the ventral plate, a few also occurring above at proximal end.

Anal pores very small.

Anal legs clothed ectally and above with numerous short setose hairs. Claw small.

Pairs of legs, forty-nine or fifty-one.

Length, 20 mm.

96. ZELANION LIBRIUS, sp. nov.

TYPE.— M. C. Z. 2,060. PARATYPE.— M. C. Z. 2,061. New Zealand: Lyell Bay (W. M. Wheeler).

Of ferruginous cast, the head and prehensors deeper.

Cephalic plate shaped much as in Mecistocephalus; narrowed gradually from a little in front of the middle caudad. On caudal portion two well-marked longitudinal furrows formed by coarse puncta and lying closer together than their own width. Plate I six times wider than long. Antennae moderate; last article shorter than the two preceding taken together.

Easily distinguished from the other species in having the exposed portion of the basal plate much longer, this in the type being 3.3 times wider than long.

Claws of prehensors when closed reaching to the end of the second antennal article. Tooth of claw slender and acute; that of femuroid very stout but short, distally broadly truncate.

Prosternal teeth rather close together, their inner edges only slightly divergent.

First legs shorter and more slender than the second.

Spiracles all circular, the first greatly exceeding the second in size.

Anterior ventral plates with a deep median longitudinal furrow. Last ventral plate of intermediate width, trapeziform, strongly narrowed caudad; caudal margin short, straight.

Coxopleural pores not crowded, about sixteen in number on each side, distributed over ventral and lateral surfaces and anteriorly extending upon the dorsal surface. Claw of anal legs long.

Pairs of legs, forty-one.

Length, 32 mm.

97. ZELANION CURTUS, sp. nov.

TYPE.— M. C. Z. 2,057. New Zealand: Taumarunni (W. M. Wheeler).

This species is very similar in general coloration, appearance, and structure to *Z. dux.* The antennae are shorter and the last article equals the two preceding taken together instead of being clearly shorter. The cephalic plate is longer, being 1.6 times longer than wide as against 1.45 times in *dux;* the plate is also differently shaped, being more gradually and uniformly narrowed from near the middle caudad, the narrowing in *dux* beginning farther caudad and much more abrupt, making the caudal corner strongly oblique. Two furrows on posterior portion of plate impressed with puncta which are also scattered elsewhere.

Basal plate much overlapped by the cephalic, the exposed portion very short as in *Z. dux.* Prosternum and prehensors very similar to those of the other species. The prosternal teeth more divergent, the mesal edges separating more widely from the median line.

First legs proportionately much less reduced than in *Z. dux*, being scarcely shorter, though more slender, than the second.

A median longitudinal furrow deep and distinct on anterior sternites but absent farther caudad, not persisting distinctly as in *Z. dux.*

Coxopleural pores larger and fewer than in *Z. dux* and not extending to the dorsal surface.

The species has fewer legs,— thirty-nine pairs as against forty-nine or fifty-one in *Z. dux.*

Length, 24 mm.

98. ZELANION (ZELANOIDES) SIMILIS, sp. nov.

TYPE.— M. C. Z. 2,058. New Zealand: Day's Bay near Wellington (W. M. Wheeler).

Color of body and legs, fulvous; the dorsum darker, anteriorly and posteriorly of ferruginous tinge; head prehensors and antennae dilute ferruginous.

Cephalic plate one and a half times longer than wide. Frontal suture absent or obscure. Paired sulci absent. Puncta numerous, rather light, fewer or absent in frontal region. Plate narrowed gradually caudad from near middle much as in *Z. curtus.*

Basal plate much overlapped by the cephalic; the exposed portion nearly 4.4 times wider than long.

Prehensors when closed reaching beyond end of first antennal article. Prosternum without chitinous lines. Prosternum, femuroid, and claw bearing teeth, the latter below suture (trochanter) also with a slight rounded black tooth. Teeth of prosternum acutely pointed, apices widely separated, the interval between them being V-shaped. Distal tooth of femuroid stouter than that of claw.

First legs scarcely or not at all shorter or more slender than the second.

Spiracles all circular; the first much longer than the second.

Last ventral plate broad; sides straight, converging caudad; caudal angles rounded and caudal margin a little convex.

Coxopleural pores small, few, along and beneath border of last ventral plate, most in the type being covered.

Anal pores very small.

Anal legs with a stout, well-developed claw.

Pairs of legs, thirty-nine.

Length, 18 mm.

99. Zelanion (Zelanoides) paucipes, sp. nov.

Type.— M. C. Z. 2,059. New Zealand: Day's Bay (W. M. Wheeler).

Very similar to the preceding species but differing in various details, Antennae shorter, the last article longer than the two preceding instead of shorter. Prosternal teeth conspicuously different; not divergent, but lying close together, only narrowly separated, distally rounded, not black. Tooth of claw of prehensors larger than that of femuroid. First legs proportionately smaller. Coxopleural pores few, chiefly along edge of plate which does not cover them as in *Z. similis*; a much smaller single pore above and caudad of these.

Pairs of legs, thirty-three.

Length of type, 12 mm.

100. Eurytion (Steneurytion) sitocola (Attems).

Geophilus (*Pachymerium*) *sitocola* Attems, Zool. jahrb. Syst., 1903, **18**, p. 256.[1]
Eurytion sitocola Attems, Fauna südw. Austr., 1911, **3**, p. 161.[2]

Localities.— New Zealand.[1] W. Australia: Collie.[2]

101. EURYTION (STENEURYTION) INCISUNGUIS Attems.

Fauna südw. Austr., 1911, **3**, p. 160, fig. 13–15.[1]

LOCALITY.— W. Australia: Harvey.[1]

102. PACHYMERINUS AUSTRALIS, sp. nov.

TYPE.— M. C. Z. 2,064. New South Wales: Southerland (W. M. Wheeler).

Fulvous; head and prehensors light ferruginous.

Cephalic plate without frontal suture. Broad, being only 1.4 times longer than wide; sides evenly convex with middle region flattened; anterior margin slightly triangular, being angular at middle; caudal margin slightly convex. Antennae short; distal article shorter than the two preceding together.

Claws of prehensors when closed reaching to middle of second antennal article.

Prosternum armed with two acute teeth. Femuroid with two teeth of which the distal is longer. Claw with a black tooth of about the same size as the distal one of the femuroid.

No prebasal plate exposed. Basal plate with exposed portion 3.33 times wider than long; strongly narrowed cephalad.

Middle piece of labrum triangular, not subtrapeziform as in *P. froggatti*, and also somewhat larger than in the latter species. The upper bars of the fulcra more slender, much less narrowed ectad than in *froggatti*.

Lappets of outer branch of first maxillae longer than in the latter species.

Second maxillae similar; pores more freely open on mesal side. First legs very much smaller than the second which are equal in length to the third.

First spiracle much larger than the second, slightly vertically elliptic. The second of similar form but the others soon becoming strictly circular.

Ventral plates coarsely punctate.

Last ventral plate long and narrow, obviously longer than wide. Coxopleurae with small pores, thirty to forty in number, below, laterally and above, a few covered by edges of ventral plate; pores above are at anterior end.

Anal pores large and distinct.

Pairs of legs, seventy-one.

Length, 45 mm.

103. PACHYMERINUS FROGGATTI Brölemann.

Records of Austr. mus., 1912, **9**, p. 61.[1]

LOCALITIES.— New South Wales: Penrith.[1] Queensland: near Brisbane (W. M. Wheeler).

104. GEOMERINUS CURTIPES (Haase).

Geophilus curtipes Haase, Abhandl. mus. Dresden, 1887, **5**, p. 109, pl. 6, fig. 114.[1]
Geomerinus curtipes Brölemann, Records Austr. mus., 1912, **9**, p. 66.[2]

LOCALITIES.— Queensland: Rockhampton;[1] New South Wales: Paramatta.[2]

TASMANOPHILUS, gen. nov.

Very close to Pachymerium. Differs in first maxillae the outer branch of which is merely membranous distally, not subdivided or biarticulate and wholly lacks the outer lappet; coxae united at middle, ectally with a very short lappet. Second maxillae nearly as in Pachymerium; claw of palpus divided. Labrum with median piece much longer and with more numerous teeth (twelve in type-species). Lateral pieces of labrum closely pectinate. Prehensors approaching the Geophilus form, short and stout, armed within. Prosternum armed anteriorly. No frontal suture. Prebasal plate present. Last ventral plate of intermediate width. Pleural pores numerous, above, laterally and ventrally. Anal legs with claw.

GENOTYPE.— *T. tasmanianus*, sp. nov.

105. TASMANOPHILUS TASMANIANUS, sp. nov.

TYPE.— M. C. Z. 1,888. Tasmania (G. H. Hardy).

Antennae 2.5 times longer than the cephalic plate. Ultimate article somewhat shorter than the two preceding taken together.

Prebasal plate present, narrow. Basal plate short, trapeziform; three times or more wider than long; anterior margin concave.

Prehensors when closed scarcely exceeding the cephalic plate. Heavy, proportioned much as in Geophilus. The first joint very short on mesal side and the ectal length being about half the length of the prosternum; stout; armed on mesal side at distal end with a broad, low and blunt eminence or tooth.

Prosternum broader than long (about 4:3); anterior margin bearing two low blunt black plates or teeth; no chitinous lines.

Anterior spiracles large, all circular, decreasing gradually from the first caudad.

First legs very much more slender than the second.

Ventral plates with a longitudinal median sulcus in middle region, this deeper and broader, more pit-like, on anterior plates when it is circular in outline, basin-like. Last ventral plate broader than long, caudally rounded.

Ventral pores not detected.

Last coxopleurae inflated, with numerous small pores above as well as below and laterally.

Last legs of male stout, densely finely and shortly pilose beneath, above with sparse, longer hairs.

Pairs of legs, fifty-five.

Length, near 50 mm.

Superficially this species is like *Pachymerium ferrugineum* (C. Koch) in having the first dorsal plate as well as the succeeding ones bisulcate and in having a median longitudinal sulcus across the basal plate. It is a much more robust species with obviously shorter prehensors and the last ventral plate less narrowed caudad, broader across caudal border. A conspicuous difference is in the labrum, the median piece of which is longer and bears twelve long teeth as against only four in *ferrugineum* and another in the first maxillae in which the outer branch is undivided and lacks a lappet.

The cephalic plate is much longer than wide (*cir.* 35:29). It is widest behind the middle just in front of the widely obliquely rounded caudal corners. Each anterior corner angularly indented or emarginate. Caudal margin widely concave. No frontal suture.

PACHYMEROIDES, gen. nov.

A clypeal area present, this with distinct small polygonal areas; polygonal areas elsewhere large and distinct. Labrum tripartite, all pieces discrete; the lateral pieces encroaching upon the median piece laterally and in front but not meeting at the middle, pectinate; median piece bearing four teeth in type, at middle two stout teeth and a smaller one on each side. First maxillae with coxae completely fused; inner branch not separated; outer branch biarticulate, the first article with a rudimentary lappet; coxa with no lappet. Second maxillae with coxae weakly united at middle with a membranous isthmus, a median suture still evident; claw of palpus long and smooth. Prehensorial feet large, much exposed in dorsal view, extending much beyond the cephalic plate in front; claw and femuroid armed as is also the prosternum. Ventral pores not detected in type-species. Last ventral plate narrow. Coxopleurae with numerous small pores beneath. Anal legs with claws.

GENOTYPE.— *P. mimeticus*, sp. nov.

106. PACHYMEROIDES MIMETICUS, sp. nov.

TYPE.— M. C. Z. 1,889. PARATYPES.— M. C. Z. 1,890. Tasmania (G. H. Hardy).

General color deep ferruginous, the head and prehensors darker, more chestnut.

Body broad anteriorly, strongly narrowed caudad.

Cephalic plate much longer than wide (14: 9), widest anteriorly and strongly narrowed caudad as in Mecistocephalus; frontal suture weakly indicated. Cephalic plate overlapping the basal plate.

Basal plate trapeziform; exposed portion three times wider than the median length.

Claws of prehensors when closed reaching to about the middle of the second antennal article; outer height of femuroid more than half the length of the prosternum (7: 12); claw armed at base with a long, stout tooth, the second and third articles with paler nodular teeth, and the first article with a short stout tooth proximad of distal end and a smaller dark nodule between this and the proximal end.

Prosternum armed in front with two stout, plate-like, teeth; wider than long (cir. 31: 29).

Spiracles all circular, the first much the largest, the second somewhat intermediate, the others decreasing very gradually caudad.

Ventral plates with a median longitudinal sulcus beginning with the second.

No ventral pores detected.

First legs shorter and much more slender than the second.

Last ventral plate narrow, longer than wide, (*cir.* 13: 11), narrowed caudad, the caudal end rounded.

Coxopleurae bearing ventrally on each side about fifteen pores.

First two articles of anal legs beyond coxopleurae bearing on ectal surface numerous short setose points densely arranged.

Anal pores distinct.

Pairs of legs, thirty-nine.

Length, 30 mm.

107. PACHYMEROIDES ALTER, sp. nov.

TYPE.— M. C. Z. 1,891. Tasmania: Wedge Bay (G. H. Hardy).

In general appearance very similar to the preceding species though lighter yellow in color excepting the head and prehensors with prosternum which are dilute chestnut.

At once distinguishable from the other species in the different form of the cephalic plate which is not conspicuously narrowed from the anterior end caudad; its sides are parallel from the rounded anterior corners caudad to near the caudal third, from where they converge to the rounded posterior corners.

The basal plate obviously less exposed than in *P. mimeticus*, the exposed area being four and a half times wider than long. The prehensors are very similar in armature; but the principal tooth of the femuroid is nearer the distal end and the median nodule is not obvious.

The last ventral plate is decidedly different, being anteriorly as broad as long and much more strongly narrowed caudad.

Coxopleural pores fewer, arranged somewhat in a circle, the more mesal ones covered.

Anal pores distinct.

Anal legs with proximal joints bearing numerous short setose points as in *mimeticus*.

Pairs of legs, thirty-seven.

Length, about 23 mm.

MESOLEPTODON, gen. nov.

Clypeal area present but rather vaguely outlined in the genotype; with distinct polygonal areas. Labrum tripartite, the pieces discrete and not overlapping; lateral pieces pectinate; median piece small, triangular, the free edge chitinous with teeth, so far as evident, very fine. First maxillae with coxae mesally fused; outer branch biarticulate, the first joint with a long lappet, the second joint long. Coxae of second maxillae not fused at middle; palpus with joints lacking processes, claw smooth. Prehensors extending beyond front margin of cephalic plate. Femuroid and claw armed. Prosternum unarmed; without chitinous lines. Ventral pores in a transverse band in front of caudal margin. Last ventral plate wide. Coxopleural pores in form of two large pits on each side. Anal legs with claw.

GENOTYPE.— *M. laetus*, sp. nov.

108. MESOLEPTODON LAETUS, sp. nov.

TYPE.— M. C. Z. 2,063. New Zealand: Taumarunni (W. M. Wheeler).

Color fulvoferruginous, uniform.

Cephalic plate with sides evenly convex, widest at middle and about equally narrowing toward both ends, the latter both wide and subtruncate; one and a half times longer than wide. Something of a furrow along position of frontal suture but a true suture apparently not present. Antennae short; the last article a little longer than the two preceding taken together.

A prebasal plate present, but this separated from the cephalic only by means of a furrow. Basal plate, so far as not covered by the first tergite, 3.2 times wider than long.

Claws of prehensors when closed a little surpassing the distal end of the first antennal article.

Prosternum without chitinous lines; unarmed; anterior margin as a whole concave. Claw armed at base with a dark, acute, conical tooth. Femuroid bearing at distal end a much smaller and paler tooth. Other joints unarmed.

Tergites bisulcate. In addition with two sulci toward each lateral border.

Spiracles circular, small, the first no larger than the second.

First legs much shorter and more slender than the second; the second legs of intermediate length.

Ventral pores numerous and distinct; in a transverse band in front of the caudal margin of plate, this band in the posterior plates tending to be divided at the middle line.

Last ventral plate very wide, subtrapeziform, the caudal margin a little convex. Coxopleurae each with two large pits adjacent to lateral edge of the ventral plate, each pit more or less doubled. Anal legs in the male moderately thickened; with numerous fine short hairs beneath; claw small.

Pairs of legs, sixty-one.

Length, 30 mm.

PHILOGEONUS, gen. nov.

Clypeal area present. Outer branch of first maxillae biarticulate, without lappets; coxae fused at middle, also without lappets. Coxae of second maxillae forming a narrow isthmus at middle in which a separating suture is still evident though weak; joints of palpus without processes, the claw smooth. Middle piece of labrum small; teeth absent or indicated merely as a few weak or obsolete crenulations. Prehensors extending well beyond front margin of head. Claw, femuroid, and the prosternum armed. Prosternum without trace of chitinous lines. No ventral pores. Last ventral plate very broad. Coxopleurae in genotype with three lobed pores on each side, these wholly covered by last plate. Anal legs with claw.

GENOTYPE.— *P. zelanicus*, sp. nov.

109. PHILOGEONUS ZELANICUS, sp. nov.

TYPE.— M. C. Z. 2,065. New Zealand: Lake Takopema, near Auckland (W. M. Wheeler).

Fulvous, with the head and prehensors pale chestnut.

Antennae short; the last article about equalling the two preceding taken together. Cephalic plate broad, the width being three fourths as great as the length; wide anteriorly and posteriorly, with the anterior margin convex, and the caudal straight or slightly incurved. No frontal suture.

Prebasal plate exposed at the middle. Basal plate broad, 3.33 times wider than long.

Claws of prehensors when closed reaching or surpassing the distal end of the first antennal article.

Prosternum short and broad as common in Geophilus; no chitinous lines; anterior margin bearing two dark, rounded teeth. Femuroid of prehensors with inner side short, armed at distal end with a conical tooth. Next two joints wholly unarmed. Claw armed at base with a black conical tooth larger than that of the femuroid.

First legs shorter and more slender than the second, the latter equalling the third.

No ventral pores.

All spiracles circular, the first larger than the second, the others decreasing very gradually.

Sulci of dorsal plates wide and shallow.

Last ventral plate very broad, with the caudal corners widely rounded; caudal margin mesally incurved. Coxopleural pores branched; three in number on each side covered by ventral plate.

Pairs of legs, forty-seven.

Length, 28 mm.

PHILOSOGUS, gen. nov.

Apparently close to Philogeonus, but differing in having the median piece of labrum obviously longer and armed with stout conical teeth which in the genotype are five in number and arranged in two series, and in the coxopleural pores. The latter are two in number on each side, the pits being simple unbranched tubules. Clypeal area present, distinctly marked off into small polygonal areas. First maxillae with coxae fused; both branches set off by suture, the outer one or palpus composed of two articles and without lappets. Coxae of second maxillae separated at middle, weakly united by a narrow isthmus only; claw smooth. Prehensors extending beyond front margin of head; femuroid and claw armed. Prosternum armed; without chitinous lines. Anal legs with six joints beyond coxopleurae; armed with a claw.

GENOTYPE.— *P. oligus*, sp. nov.

110. PHILOSOGUS OLIGUS, sp. nov.

TYPE.— M. C. Z. 2,168. New South Wales: Wentworth Falls (W. M. Wheeler).

Antennae moderate, one and a half times the length of the cephalic plate. The latter with caudal margin truncate, the anterior margin straight on each side but arched forward at middle, the sides slightly convex over most of length but more strongly rounding in at ends. Plate I. 43 times longer than wide.

Clypeal area small and pale, distinctly marked off into polygonal areas much smaller than those of the adjacent parts. Median piece of labrum bearing a caudal series of three stout dark teeth of which the median is longest and just in front of these two other stout teeth, all teeth projecting more or less ventrad.

Basal plate largely overlapped by the cephalic; the exposed portion short, five and a half times wider than long, the covered part a little longer than the exposed.

Claws of prehensors when closed reaching to near end of the second antennal article; femuroid armed distally with a short blunt tooth and proximad of trochanter suture with an obscure one; claw armed at base with a long, distally obliquely truncate tooth which narrows but little distad.

Prosternum armed on anterior margin with two large, bluntly rounded processes or teeth which are but narrowly separated from each other.

First legs a little shorter and more slender than the second, the latter equalling the third.

No ventral pores.

Spiracles all circular, the first much the largest, the second intermediate.

Last ventral plate wide, strongly narrowed caudad, the margin forming an evenly convex curve about caudal corners and caudal end. Coxopleural pores covered by last plate.

Pairs of legs, thirty-seven.

Length, 19 mm.

ZELANOPHILUS, gen. nov.

Frontal suture present. No clypeal area present. In character of labrum suggesting Pachymeroides but the lateral pieces actually come in contact in the middle line; lateral pieces strongly pectinate; median piece more strongly chitinized, with numerous stout subconical teeth. Both divisions of first maxillae separated off; outer division biarticulate, the second article much exceeding the first in length; coxae chitinized throughout instead of only ectally, fused; no lappets present. Second maxillae of geophiloid form; short, coxae firmly united at middle, pore not enclosed mesally. Prehensors when closed but slightly exceeding the head; claw unarmed; femuroid armed; no chitinous lines present. Ventral pores present in a band caudad of middle of plates, numerous. Last ventral plate narrow. Coxopleural pores numerous, occurring dorsally as well as ventrally. Anal legs with claw, but the latter, in type, reduced.

GENOTYPE.— *Z. wheeleri*, sp. nov.

111. ZELANOPHILUS WHEELERI, sp. nov.

TYPE.— M. C. Z. 1,897. PARATYPES.— M. C. Z. 1,898. New Zealand: Wellington, Plummerton, August, 1914 (W. M. Wheeler).

General color above dilute ferruginous anteriorly, becoming more fulvous caudad. Head and prosternum deeper ferruginous. Legs fulvous. Antennae pale ferruginous.

Head broad, only a little longer than wide (5:4.5), subquadrate in general outline but widest near frontal suture from where it narrows moderately to the rounded caudal corners; caudal margin long, straight or slightly incurved. Frontal suture distinct. Antennae long, attenuated, last article shorter than the two preceding together.

Basal plate covered in front by the cephalic plate, broad, the exposed part more than five times wider than long.

Claws of prehensors when closed extending but little beyond the front margin of head, to near middle of first antennal article. Prehensors heavy. Claws unarmed. Femuroid with a blunt tooth at distal end within.

Anterior edge of prosternum presenting two chitinous margins but without true teeth or processes. Exposed part of prosternum decidedly wider than long (5:4).

Lateral pieces of labrum meeting at middle, apparently extending if not actually united with the median piece, pectinate, the prehensors long and fine; median piece or region more chitinous, darker, armed with nine stout teeth.

Coxae of first maxillae united; inner and outer processes united, the latter biarticulate with the second article much longer than the first; no lappets present.

Second maxillae with coxae fused, of geophiloid form.

Ventral pores numerous and fine; in a transverse area behind middle, this band widest at middle and narrowing laterad on each side.

First spiracle very large, vertically subelliptic, somewhat narrower ventrally; those following of similar form, large but decreasing gradually caudad, in posterior region becoming small and circular.

Dorsal plates bisulcate and with a finer median sulcus between the other two.

Last ventral plate long, narrow, narrowed caudad, sides and caudal margin straight. Coxopleurae with numerous small pores over entire surface above and below, but absent from caudal region of sides.

Anal legs composed of six articles distad of the coxopleurae; claw small; hairs of ventral surface fine and very short.

Pairs of legs, sixty-nine.

Length, 60 mm., evidently much shortened owing to preservation.

PACHYMERELLUS, gen. nov.

Form of head and prehensors much as in Geophilus. Clypeal area lacking as in Insignoporus; but clypeus in general with strongly marked polygonal areas. Claw and femuroid of prehensors armed. Prosternum also armed; with well-developed chitinous lines. Labrum tripartite with the median piece large, more strongly chitinous than lateral pieces, bearing numerous (twelve in type) long, dark, fang-like teeth; free edge of median and lateral pieces forming an almost even concave line, the three pieces fitting closely together; lateral pieces densely pectinate. First maxillae with both branches separated off; the outer one biarticulate, with the two articles about equal in length, the first without lappet; coxae at middle membranous, being well chitinized only laterally, each bearing a long membranous lappet. Second maxillae with claw of palpus divided; coxae not completely fused at middle, a suture evident. Ventral pores lacking. Last segments as in Pachymerium. Last ventral plate small. Coxopleurae with numerous pores above, laterally and below. Anal legs with claws.

GENOTYPE.— *P. zygethus*, sp. nov.

112. PACHYMERELLUS ZYGETHUS, sp. nov.

TYPE.— M. C. Z. 1,892. PARATYPES.— M. C. Z. 1,893. Tasmania (G. H. Hardy).

Color yellow of a dilute ferruginous tinge.

Body widest anteriorly, narrowing continuously caudad.

Cephalic plate widest posteriorly, conspicuously narrowing cephalad. Anterior border convex, posterior border concave. No frontal suture. Antennae very short.

Basal plate overlapped anteriorly by the cephalic plate, the exposed portion broad and short, five times wider than long.

Prehensors stout. Claws when closed scarcely exceeding the cephalic plate. Femuroid very short on mesal side. Claw armed at base with a stout, low, conical tooth.

Prosternum with two blunt dentiform plates anteriorly; chitinous lines distinct excepting at extreme anterior end.

Anterior spiracles large, elliptic, the first largest though not greatly so, gradually decreasing in size caudad and gradually becoming circular.

Beginning with the second, the sternites are conspicuously marked with a median concavity or pit which increase in size and depth back to the ninth and tenth plates and then again decrease, practically disappearing after the sixteenth somite. No pores detected.

Last ventral plate small, shorter than wide, trapeziform, being narrowed strongly caudad and being caudally truncate. Coxopleurae inflated; bearing numerous small pores below and above and fewer ones laterally.

Anal pores small.

Pairs of legs, fifty-five.

Length, near 35 mm.

113. SOGOPHAGUS SERANGODES (Attems).

Geophagus serangodes Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 476.[1]

LOCALITY.— Halmaheira: Soah Konorah.[1]

114. GEOPHILUS XYLOPHAGUS Attems.

Zool. jahrb. Syst., 1903, **18**, p. 237.[1]

LOCALITY.— New Zealand.[1]

115. GEOPHILUS DUPONTI Silvestri.

Ann. Soc. ent. Belgique, 1897, **41**, p. 345.[1]

LOCALITY.— New South Wales: Sydney.[1]

116. GEOPHILUS HARTMEYERI Attems.

Fauna südw. Austr., 1911, **3**, p. 158, f. 11, 12.[1]

LOCALITY.— W. Australia: Denham, Eradu, Albany.[1]

117. GEOPHILUS (PLEUROGEOPHILUS) PROVOCATOR Pocock.

Geophilus provocator Pocock, Ann. mag. nat. hist., 1891, ser. 6, **8**, p. 225, pl. 12, fig. 10, 10ab.[1]

LOCALITY.— New Zealand: Wellington.[1]

118. GEOPHILUS (?) CONCOLOR Gervais.

Ins. apt., 1847, **4**, p. 320.[1] Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 108, pl. 6, fig. 113.[2]

Necrophloeophagus concolor Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 461.[3]

LOCALITIES.— New South Wales: Port Jackson,[1] Sydney,[2] New England.[3] Queensland: Rockhampton.[2] W. Australia: Perth.[3]

Until the mouth-parts of this and the following species listed under Geophilus have been studied, it seems impossible accurately to refer them to their proper genera as these are now restricted.

119. GEOPHILUS (?) ANTIPODUM Pocock.

Ann. mag. nat. hist., 1891, ser. 6, **8**, p. 222, pl. 12, fig. 8.[1]

Necrophloeophagus antipodum Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 461.[2]

LOCALITIES.— Victoria: Fern Tree Gully.[2] New Zealand: Maungatua, Wellington.[1]

120. GEOPHILUS (?) SYDNEYENSIS Pocock.

Ann. mag. nat. hist., 1891, ser. 6, **8**, p. 219.[1]

LOCALITY.— New South Wales: Port Jackson, Inner Double Bay.[1]

121. GEOPHILUS (?) OPINATUS (Newport).

Arthronomalus opinatus Newport, Trans. Linn. soc. London, 1845, **19**, p. 433.[1]
Necrophloeophagus opinatus Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 461.[2]

LOCALITIES.— Australia.[1] Victoria: Gippsland;[2] New South Wales: Narre Warren.[2]

122. GEOPHILUS (?) SPENCERI (Pocock).

Necrophloeophagus spenceri Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 462.[1]

LOCALITIES.— New Zealand: South Island, the Bluff.[1]

123. GEOPHILUS (?) LATICEPS Pocock.

Ann. mag. nat. hist., 1891, ser. 6, **8**, p. 220, pl. 12, fig. 6, 6a.[1]

LOCALITY.— Australia: Bass Strait, King's Island.[1]

124. GEOPHILUS (?) MORBOSUS (Hutton).

Himantarium morbosum Hutton, Ann. mag. nat. hist., 1877, ser. 4, **20**, p. 115.[1]
Geophilus morbosus Pocock, Ann. mag. nat. hist., 1891, ser. 6, **8**, p. 221, pl. 12, fig. 7, 7a.[2]

LOCALITY.— New Zealand:[1, 2] Wellington.[2]

125. GEOPHILUS (?) POLYPORUS Haase.

Abhandl. Mus. Dresden, 1887, **5**, p. 110, pl. 6, fig. 116.[1]

LOCALITY.— New Guinea: D'Urville Island.[1]

126. PACHYMERIUM PERFORATUM (Haase).

Geophilus concolor var. *perforatus* Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 109.[1]

Geophilus (*Pachymerium*) *perforatus* Attems, Zool. jahrb. Syst., 1903, **18**, p. 252.[2]

LOCALITY.— Queensland: Gayndah.[1, 2]

127. PACHYMERIUM SCHAUINSLANDI Attems.

Geophilus (*Pachymerium*) *schauinslandi* Attems, Zool. jahrb. Syst., 1903, **18**, p. 251.[1]

LOCALITIES.— Stephens Island. Chatham Island.[1]

128. MAORIELLA MACROSTIGMA Attems.

Zool. jahrb. Syst. 1903, **18**, p. 284, pl. 14, fig. 26–28.[1]

LOCALITY.— New Zealand: North Island.[1]

129. MAORIELLA AUCKLANDICA Attems.

Zool. jahrb. Syst. 1903, **18**, p. 285.[1]

LOCALITY.— New Zealand: Auckland, Bay of Island.[1]

CHILENOPHILIDAE.

130. POLYGONAREA WHEELERI, sp. nov.

TYPE.— M. C. Z. 2,069. Queensland: Koak (W. M. Wheeler).

Last article of the antennae obviously shorter than the two preceding taken together.

Form of cephalic plate much as in the following species.

The coxal process of the second maxillae is less acute, more finger-like than in the two species mentioned. Differing from *P. repanda* in not having any process on the second joint of the palpus of the second maxillae.

Prosternum of the usual general form; anterior margin without teeth, though what looks like the truncate base of one is shown on the right side.

Femuroid with tooth round, low, nodular, that of trochanter division obscure; tooth of claw as usual.

Anterior spiracles large, vertically elliptic, the first larger than the second though not greatly so; others gradually decreasing in going caudad and soon becoming circular.

Last ventral plate broader than in other species; sides convex, converging. Caudal border densely clothed with fine short hairs; caudal margin straight. Coxopleural pores completely covered, well removed mesad from edge of plate, opening into two pits on each side. No anal pores.

Pairs of legs, sixty-five.

Length, 48 mm.

The species is like *P. darrana*, sp. nov. and *P. repanda* Attems in lacking pores on the first ventral plate. Those of the second plate in a circular area not much smaller than that of the third.

131. POLYGONAREA DERRANA, sp. nov.

TYPE.— M. C. Z. 2,068. Queensland: Dana, near Brisbane (W. M. Wheeler).

Fulvous, darker above; head and prehensors chestnut.

Last article of antennae about equal to the two preceding taken together.

Cephalic plate 1.47 times longer than wide. Plate slightly constricted in front of position of frontal suture, the latter, however, being absent; anterior margin mesally weakly indented; all corners oblique; caudal margin straight.

No prebasal plate. Exposed portion of basal plate short, 3.7 times wider than long.

Claws of prehensors when closed reaching to distal end of second antennal article.

Prosternum long, sides parallel; chitinous lines incomplete anteriorly; anterior margin armed with two well separated, distally rounded teeth. Femuroid of prehensors bearing a low rounded tubercle at distal end; trochanter or basal division with an obsolete nodular tooth; intermediate joints unarmed; claw with a dark conical tooth.

Coxa of each second maxilla at mesodistal angle with the usual long acute process, the joints of palpus without processes.

Ventral pores in the usual circular area on anterior plates, the form in posterior ones more transverse and tending to divide. Pores on the second sternite forming a distinct circular area but this much smaller than that of the succeeding sternite.

First legs much shorter than the second, the latter equal to the third.

Spiracles all circular, the first much larger than the second, the others decreasing gradually caudad.

Last ventral plate broad, narrowed caudad, with the caudal margin nearly straight; caudal border somewhat depressed. Coxopleural pores opening into two pits on each side at edge of and partly covered by the last ventral plate.

No anal pores.

Pairs of legs, fifty-one.

Length, 31 mm.

132. POLYGONAREA IMPARATA Attems.

Fauna südw. Austr., 1911, **3**, p. 161, fig. 16.[1]

LOCALITIES.— W. Australia: Lion Mill, Mundaring, Subiaco, Karrakatta, Fremantle, Collie, Boyanup, Pickering Brook.[1]

133. POLYGONAREA REPANDA Attems.

Fauna südw. Austr., 1911, **3**, p. 163, fig. 17.

Polygonarea repanda multipes Attems, *Ibid.*, p. 163.[1]

LOCALITY.— W. Australia: Wooroloo, Mundaring, Fremantle, Serpentine, Cannington, Jarrahdale.[1]

Attems separates this species into two subspecies for each of which he gives a name different from that of the species. Since one subgenus must retain the name of the species, I here place the subspecies *multipes* as a synonym of *P. repanda sens. str.*

133a. POLYGONAREA REPANDA CONIFERA Attems.

Fauna südw. Austr., 1911, **3**, p. 165.[1]

LOCALITY.— W. Australia: Yalgoo, Dongarra, Mundijong, Brunswick, Bridgetown, Gooseberry Hill, York, Broome Hill, Cranbrook.[1]

134. SCHIZORIBAUTIA AGGREGATUS Brölemann.

Proc. Linn. soc. N. S. W., 1906, **40**, p. 683.[1]

LOCALITY.— New South Wales.[1]

MECISTOCEPHALIDAE.

135. MECISTOCEPHALUS NIGRICEPS, sp. nov.

TYPE.— M. C. Z. 1,904. PARATYPES.— M. C. Z. 1,905, 1,913, 1,932, 1,956, 1,961, 1,965, 1,987, 2,012, 2,017, 2,018, 2,135, 2,136, 2,138, 2,155–2,158. Fijis: Nadarivatu, Nasoqo, Lakeba Lau, Labasa, Somo Somo, Lasema, Lomati, Nansori, Wainganitu, Vanua Ava, Vunisia, Suva, Turuca. Solomons: Auki, Florida, Pamua, Fulakora (W. M. Mann).

This species has a very characteristic color appearance on account of the generally black head, prosternum, prehensors, basal and first dorsal plates, and antennae, and the somewhat brownish appearance of the dorsal plates each of which is typically crossed over the caudal border by a darker band. The head is of the usual long and narrow form, being nearly 1.88 times longer than wide; it is widest anteriorly, narrowing caudad gradually to near the posterior third and then more strongly to the truncate caudal end. The frontal suture, unlike that in *M. tenuiculus,* is very clearly evident throughout. Behind the suture and converging gently to the caudal margin are two rows of coarse, deeply impressed puncta which often give the impression of lying in continuous sulci. In front of the suture a pair of coarse puncta and in front of each of these a long seta. Anterior margin of head at middle subangularly emarginate. Lateral pieces of labrum with margins wholly smooth and even; middle piece abruptly narrowed at caudal end, but little widening cephalad from there. Mandibles with nine laminae which are dentate throughout, the teeth smaller toward base; first lamina with only five teeth; external angle simple, not laciniate. Basal plate with a large shallow puncture or pit on each side toward the anterior corner; a few much finer puncta on the more posterior region. Prosternum with very sparse fine puncta; anterior oblique border crossed by two dark chitinous bands projecting anteriorly as slight teeth between which is an emargination. The femuroid is armed at distal end with a long, stout, distally blunt black tooth and the usual smaller one proximad of the oblique suture. The second and third articles with blunt black distally rounded nodules or teeth. The tooth at base of claw small, low, broadly subconical. Dorsal plates of middle and posterior region strongly bisulcate and roughened, scabrous or corniculate, the anterior five or six plates smooth excepting for the deep puncta; paired sulci not present on first plate. Ventral plates each with a deep median longitudinal sulcus over about its posterior two thirds, this faintly bifurcate anteriorly but conspicuously differing from the strong Y-shaped impression of, *e. g.*, *punctifrons*. Last ventral plate subtrapeziform, much less strongly narrowed caudad than in *punctifrons*, the caudal margin convex, each lateral border incurved near middle and again between middle and caudal end, the region caudad of second emarginations more depressed, densely finely hairy, the second region intermediate, similarly clothed, separated by a depression from the anterior region which is convexly elevated and clothed more sparsely with longer, coarser hairs. Inner aporous band of coxopleurae broader than in *punctifrons,* oblanceolate in outline, densely finely hairy; pores of coxopleurae much fewer and larger than in *punctifrons;* no distinct longitudinal sulcus or suture dorsally. Last dorsal plate much broader than in *punctifrons,* somewhat shield-shaped, the anterior margin being a little concave, the lateral ones convex and converging and the caudal end rounded. The posterior border a lighter area over which are lines suggesting the lines of the palm of the hand or fingers formed by dark chitinous areas arranged in rows; similar markings along caudal borders of other dorsal plates also occurring. Scutum over genital region with numerous densely arranged dark polygonal areas not arranged in lines. Anal pores present, distinct.

Pairs of legs, forty-nine.

Length, up to 45 mm.

136. MECISTOCEPHALUS ANGUSTIOR, sp. nov.

TYPE.— M. C. Z. 2,062. Society Islands: Tahiti (W. M. Wheeler).

Pale ferruginous, the head and prehensors deep ferruginous. Cephalic plate 1.87 times wider than long. Differing in form from that of *M. punctifrons,* being smaller, proportionately narrower anteriorly, so that the sides converge caudally much less strongly; margin widely rounded anteriorly between the ends of the frontal suture, incised mesally between bases of antennae. Puncta absent from frontal region, few elsewhere. Two short parallel furrows in caudal region, these embracing puncta; closer together than their width. Ventral teeth of head close to lateral edge on each side, black, slender and acute. Femuroid of prehensors with two blunt, rounded teeth, a distal one and one proximad of the oblique suture. Claw and intermediate joints also armed. Anterior ventral plates each with a v-shaped impression in which the side arms are very short; in the middle and posterior regions the impression is a simple linear furrow, the arms being quite obliterated. Paired dorsal sulci beginning on the basal plate and present on tergites from there caudad. Last ventral plate rather broad, trapeziform, the caudal margin rounded. Coxopleurae scarcely encroaching on preceding segment; pores fine and numerous. Last dorsal plate long and narrow, caudally rounded.

Pairs of legs, forty-nine.

Length, about 27 mm.

137. MECISTOCEPHALUS ERYTHROCEPS, sp. nov.

TYPE.— M. C. Z. 1,906. PARATYPE.— M. C. Z. 1,907, 1,914. Fijis: Nadarivatu, Levuka (W. M. Mann).

As compared with *M. nigriceps* or *punctifrons* this is a decidedly more slender species of nearly uniform width over the anterior half, the posterior region attenuated. It is a much paler species, the body in general being uniform light yellow, the head and prosternum with prehensors reddish, the first tergite paler. The head with a pair of short longitudinal sulci in front of caudal margin, the plate in front of this with weak puncta not forming well-marked lines as in *nigriceps*. Labrum with mesal angles of lateral pieces rounded, not at all produced, their margins wholly smooth. Dorsal plates clearly bisulcate from the first inclusive caudad. None roughened, tuberculate or scabrous. Median sulcus of ventral plates sharply defined, bifurcation anteriorly obscure as in *nigriceps*. Last ventral plate proportionately wider than in *nigriceps*, not laterally emarginate, surface of uniform character, caudal margin rounded. Last tergite proportionately narrower than in *nigriceps*, not shield-shaped, sides more weakly convex. Nonporigerous ventral region of coxopleurae wide, oblanceolate.

Pairs of legs, fifty-one.

Length, to 31 mm.

138. MECISTOCEPHALUS KURANDANUS, sp. nov.

TYPE.— M. C. Z. 2,066. Queensland: Kuranda (Wm. M. Wheeler).

This species is easily distinguished from all others known in the character of the labrum. The lateral pieces have the margin wholly lacking cilia; but the mesal end of each is conspicuously crenate, the most mesal of the seven or eight crenations of each piece being more dentiform than the others. The median piece of labrum is caudally much narrowed, the lateral pieces touching, or nearly so, ventrad of its apex. The mandible bears nine laminae which are dentate throughout, with the distal teeth longer than the proximal ones excepting on the first lamina which bears six teeth differing but little in length. Cephalic plate near 1.8 times longer than wide. The sternal sulcus bifurcate anteriorly, the angle of the fork rectangular or nearly so. Coxopleurae of the usual general type with numerous small pores. Head and prehensorial segment chestnut, the body brown with obscure dusky mottlings. Young specimens show a greenish tinge posteriorly.

Pairs of legs, forty-nine.

Length of type, 84 mm.; greatest width, 3.2 mm.

139. Mecistocephalus simplex, sp. nov.

Type.— M. C. Z. 2,067. Queensland: Cairns (W. M. Wheeler).

Superficially this species differs from the preceding one, *M. kurandanus*, in having the anterior angle of the sternal impressions of the anterior segments obtuse instead of rectangular. The lateral pieces of the labrum have the margin wholly without crenations such as characterize *kurandanus*. In the type the mandibles have seven pectinate lamellae; these are dentate to the base with teeth increasing in length from base distad. Head 1.66 times longer than wide. Prosternal teeth acute. Teeth of femuroid of prehensors stout and bluntly rounded. Pores of coxopleurae very numerous, small, with no specially enlarged ones. Head and prehensors chestnut, the body otherwise fulvous.

Pairs of legs, forty-nine.

Length of type, 40 mm.

140. Mecistocephalus mimeticus, sp. nov.

Type.— M. C. Z. 148. Paratypes.— 2,149–2,153, 2,854, 2,855. Solomons: Fulakora, Tulagi, Auki, Wai-ai, Ngi, Pamua, Wainoni Bay (W. M. Mann).

This species is remarkably like *M. nigriceps* in general appearance and structure excepting in having the number of pairs of legs constantly forty-seven instead of forty-nine. It has the head, prehensorial segment, antennae, and one or two more anterior segments similarly black and the caudal plates dark brown with the caudal borders often darker. It is on the average a smaller species, but parallels the other closely in details. The mandibles, however, have but six laminae instead of nine, with the first one bearing six teeth; external angle with three or four setiform processes instead of being simple. Labrum less angular at middle.

Length of largest type, 30 mm.

141. MECISTOCEPHALUS LIFUENSIS Pocock.

Willey's Zool. results, 1898, pt. 1, p. 63.[1]

LOCALITY.— Loyalty Islands: Lifu.[1]

142. MECISTOCEPHALUS MAXILLARIS (Gervais).

Geophilus maxillaris Gervais, Ann. sci. nat., 1837, ser. 2, **7**, p. 52.
Lamnonyx maxillaris Silvestri, Records Indian mus., 1919, **16**, pt. 1, no. 5, p. 61.[1]

LOCALITIES.— New Guinea: Simbang; Sattelberg.[1]

143. MECISTOCEPHALUS MODESTUS (Silvestri).

Lamnonyx nodestus Silvestri, Records Indian mus., 1919, **16**, pt. 1, no. 5, p. 68, fig. XIII, 1–10.[1]

LOCALITY.— New Guinea: Sattelberg.[1]

144. MECISTOCEPHALUS INSULARIS (Lucas).

Geophilus insularis Lucas, Maillard's Reunion, ed. 2, 1863, Annex N, pl. 21, fig. 1.
Lamnonyx punctifrons glabridorsalis Attems, Zool. jahrb. Syst., 1900, **13**, p. 138 [1]; Bijdr. dierk., 1915, **20**, p. 4.[2]

LOCALITY.— Ceram: Honitetu.[2] Otherwise recorded only from the Seychelles.[1]

145. MECISTOCEPHALUS CASTANEICEPS Haase.

Abhandl. Mus. Dresden, 1887, **5**, p. 102, pl. 6, f. 109. Pocock, Ann. mag. nat. hist., 1898, ser. 7, **1**, 327.[1]

LOCALITY.— Ellice Islands: Rotuma.[1]

Otherwise known from the Andamans, Christmas Island, and Pulo Edam.

146. MECISTOCEPHALUS SPISSUS Wood.

Journ. Acad. nat. sci. Phil., 1863, ser. 2, **5**, p. 43.[1]

Lamnonyx spissus Silvestri, Fauna Hawaiiensis, 1904, **3**, p. 326;[2] Records Indian mus., 1919, **16**, pt. 1, no. 5, p. 75, fig. XIX, 1–10.[3]

LOCALITIES.— Hawaiian Islands: Oahu or Kaui;[1] Maui: Haleakala; Molokai: Kau; Kauai: Halemanu;[2] Hawaii: Kilauea.[3]

This species has otherwise been definitely recorded from Burma and Sumatra by Pocock (Ann. Mus. civ. Genova, 1891, **30**, p. 424) who notes it is not uncommon in the Indo-Malayan area (Weber's Reise, 1894, **3**, p. 317).

147. MECISTOCEPHALUS TAHITIENSIS Wood.

Journ. Acad. nat. sci. Phil., 1863, ser. 2, **5**, p. 43.[1] Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 101.[2]

Mecistocephalus tahitiensis pororus Haase, *Ibid.*, p. 102.[3]
Lamnonyx tahitiensis Attems, Fauna südw. Austr., 1911, **3**, p. 158.[4]
Lamnonyx tahitiensis Silvestri, Records Indian mus., 1919, (16), pt. 1, no. 5, p. 47, fig. XVIII, 1–12.[5]

LOCALITIES.— Society Islands: Tahiti.[1] Queensland: Gayndah, Rockhampton.[2] New South Wales: Loftus.[5] W. Australia: Tamala, Northampton, Eradu, Wooroloo, Lion Mill, Guildford, Subiaco, Jarrahdale, Collie, Bunburry, Donnybrook, Gooseberry Hill, York, Cranbrook, Torbay; Albany.[4] Fijis: Viti Levu.[3] New Guinea: Sattelberg.[5]

148. MEGETHMUS FERRUGINEUS (Hutton).

Himantarium ferrugineum Hutton, Ann. mag. nat. hist., 1877, ser. 4, **20**, p. 115.
Geophilus huttoni Pocock, *Op. cit.*, 1891, ser. 6, **8**, p. 223.[1]

LOCALITY.— New Zealand: Wellington.[1]

DASYPTYX, gen. nov.

Differing from Mecistocephalus *sens. str.* in having the mandibular laminae dentate only distally and the portion proximad of the teeth with margin densely ciliate to base instead of dentate throughout. It also differs in having the lateral pieces of the labrum densely ciliate throughout instead of being wholly smooth.

GENOTYPE.— *D. solomonensis*, sp. nov.

Includes also *D. gigas*, *subgigas*, and *uncifer*. New Guinea seems to be the center of distribution of this group.

149. DASYPTYX SOLOMONENSIS, sp. nov.

TYPE.— M. C. Z. 2,147. Solomons: Ngi, Wainoni Bay, Tulagi, Fulakora (W. M. Mann).

In this species the number of mandibular laminae is large, being twenty-three to twenty-six in the specimens examined. It otherwise differs from *gigas*, *subgigas* and *uncifer* in the much greater length of the marginal cilia of the laminae, these equalling or exceeding the width of the stalk instead of being very much shorter; and also in the obviously greater length of the distal teeth which are fewer and of which the more proximal ones are less reduced in length. Cephalic plate longer than wide in the ratio 1.53:1, being thus shorter than in the related forms. The teeth of the prehensors are short and stout and are often concave on the proximal edge but never truly uncate as they are in *uncifer;* claws only moderately curved, the edges wholly smooth. The coxopleurae lack any single specially enlarged pores such as are present in *subgigas*. Color of head and prehensorial segment chestnut, the remaining portion of body brown.

Pairs of legs, forty-nine.

150. DASYPTYX GIGAS (Haase).

Mecistocephalus gigas Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 105, pl. 6, fig. 111.[1] Attems, Abhandl. Senckenb. gesells., 1897, **23**, p. 475.[2]
Mecistocephalus punctifrons gigas Attems, Bijdr. dierk., 1915, **20**, p. 5.[3]
Lamnonyx gigas Silvestri, Records Indian mus., 1919, **16**, pt. 1, no. 5, p. 69.[4]

LOCALITIES.— New Guinea, or near it.[1] British New Guinea: Fife Bay.[4] Halmaheira.[2] Ceram: Honitetu.[3]

151. DASYPTYX SUBGIGAS (Silvestri).

Lamnonyx subgigas Silvestri, Records Indian mus., 1919, **16**, pt. 1, no. 5, p. 70, f. XV, 1–7, XVI, 1–9.[1]

LOCALITY.— New Guinea: Simbang, Sattelberg.[1]

152. DASYPTYX UNCIFER (Silvestri).

Lamnonyx crucifer Silvestri, Records Indian mus., 1919, **16**, pt. 1, no. 5, p. 12, fig. XVII, 1–9.[1]

LOCALITY.— New Guinea: Moroka.[1]

ECTOPTYX, gen. nov.

First lamella of mandible with teeth numerous, eighteen or more; mesal margin below this lamella smooth or at most with but few and weak serrations. Median lamellae of mandible dentate to base, with the distal teeth long but the median and proximal ones very short. The labrum characterized by having the lateral pieces notably strongly extended caudad at mesal ends, the mesal angles acute and extending much caudad of lateral region of labrum; along the outer portion of each lateral piece a dense line of cilia extends beyond free caudal margin, giving the appearance of fringed margin. Otherwise as in Mecistocephalus, etc.

GENOTYPE.— *E. labasanus*, sp. nov.

The first lamella of the mandible suggests that of the Indian Pauroptyx Chamberlin though the number of teeth is always greater and the extensive serration of the mesal margin below it is missing or but weakly suggested. Readily distinguished from the other known genera by the characteristic form of the labrum and the presence of the ciliary bands along ectal portions.

153. ECTOPTYX LABASANUS, sp. nov.

TYPE.— M. C. Z. 2,140. Fijis: Nagasu (W. M. Mann). PARATYPES.— M. C. Z. 1,952, 1,953, and 2,141. Fijis: Labasa, Suene (W. M. Mann).

Body brownish, densely marked above with a network of black, the same also less strongly evident on pleurae and sternites, the network on dorsum sometimes forming a denser, broad median longitudinal band. Head and prehensors chestnut.

Head with anterior margin subtruncate or very slightly and very obtusely produced forward, notched at middle. The anterior corners oblique. Sides converging moderately from frontal suture caudad to the more strongly narrowed posterior region. Caudal margin nearly straight, very slightly convex. Head about 1.6 times longer than wide. Areolated region of clypeus longer than the paired, non-areolated, posterior areas. A very small median chitinous spot present.

Labrum with line of cilia showing from outer end on each side about half way to median end. Median piece rather broadly cuneate but with sides, excepting toward anterior end, weakly incurved, convex; the anterior edge bulging forward convexly; the length less than twice the greatest width, the ratio being near 32: 17.

Mandible with fourteen lamellae of which the ordinary ones have the distal teeth long and the median and proximal ones very short. First lamella with eighteen to twenty teeth, these reduced regularly from the distal ones proximad. A median lamella with about thirty-seven teeth.

Ectal angle of coxa of first maxilla produced slightly ectad of cephalad, acute. Posterior corners of coxosternum of second maxillae acutely and considerably extended; pores moderately large, suboval; a median non-areolate band set off from lateral non-areolate regions.

Prosternum armed. Prehensors with the typical teeth. Claw at base with a single nodule or tooth. Femuroid with proximal tooth small, the distal one greatly exceeding it, much as in *Mecistocephalus philippinus* Chamb. though the disproportion is not so great; conical, narrowly rounded distally. The next two articles armed, the tooth of the second much exceeding that of the first.

Sternal impressions furcate, the angle obtuse.

Ventral plate of pregenital segment strongly narrowed caudad, notched on each side in front of caudal end. Coxopleural pores very numerous, small and very small, the pores of the two sizes typically not much differing in number.

Pairs of legs, forty-nine.

Length, to about 55 mm.

154. ECTOPTYX KABASANUS, sp. nov.

TYPE.— M. C. Z. 2,049. Fijis: Kabasa Lau (W. M. Mann).

Dorsum, and to a less marked degree the pleurae and sternal region, darkened by a network and mottling of black as in *F. labasanus*, the pregenital segment and anal region in the type abruptly paler and a median pale line evident on dorsum in posterior region. Head and prehensors chestnut.

Head of same general form and proportions as in *labasanus*, with the clypeal region similar.

Labrum with line of cilia exposed on each side as in *labasanus*. Median piece similarly broadly cuneate, but the sides straight or incurved, not convex, and the piece only slightly more than once and a half longer than the greatest width.

The species is readily distinguished by the characters of the mandible. Nineteen lamellae are present. The median ones have the distal teeth long and the others shortened in the typical manner. First lamella with twenty-three teeth which are reduced proximad. A median lamella with about fifty-five teeth. Margin below first lamella smooth.

Ectal angle of coxa of first maxilla produced, the process somewhat more robust than in *F. labasanus*. Coxosternum of second maxillae with a median chitinous, non-areolated band separated from lateral regions. Pore angular in outline.

Armature of prosternum and prehensors normal. The teeth of femuroid lower and broader than in the preceding species, the distal one greatly exceeding the proximal one, broadly conical, the width at base exceeding the height. Teeth of next two joints rounded, the second the larger. Claw with a robust, rounded, bulging prominence at base.

Sternal impressions furcate, the angle obtuse.

Sternite of pregenital segment more moderately narrowed caudad, notched on each side a little in front of caudal end as in the preceding form. Coxopleural pores very numerous, small and minute.

Pairs of legs, forty-nine.

Length of type, about 75 mm.; width of first plate, 3 mm.

155. ECTOPTYX TURUCANUS, sp. nov.

TYPE.— M. C. Z. 2,137. Fijis: Turuca (W. M. Mann).

Coloration in general similar to that of the preceding species, the same network and marbling in black being present.

Head of same general form as that of preceding species but relatively broader, in the type only about 1.4 times longer than broad. Clypeal region of same general character.

Labrum with ciliary line exposed at each side. Median piece cuneate, the sides straight and the anterior margin convex at middle much as in *E. kabasanus*; once and a half, or somewhat less, as long as greatest width.

Mandible with thirteen lamellae of which the outermost is greatly reduced, being little more than a slender, acute point with vague serrations. The first lamella with nineteen teeth not stouter than those of the other lamellae, gradually decreasing caudad. Teeth of a median lamella about eighteen in number.

Ectal angle of coxa of first maxilla produced forward. Coxosternum of second maxillae with median area as usual. Pores narrowly and longitudinally subelliptic in outline.

Teeth of prosternum and prehensors nearly as in *E. labasanus*.

Sternal impressions furcate, the angle as a whole obtuse, more nearly rectangular toward apex.

Ventral plate of pregenital segment somewhat more strongly narrowed caudad than in *E. kabasanus*, notched as usual. Coxopleural pores as usual.

Pairs of legs, forty-nine.

Length, 45 mm.

156. ECTOPTYX SOMONUS, sp. nov.

TYPE.— M. C. Z. 2,139. Fijis: Somo Somo (W. M. Mann).

Coloration of the usual type.

Head of the ordinary general form, 1.6, or slightly less, times longer than wide. The clypeal region lacks the small median chitinous spot present in the preceding species and the areolated region is more extensive.

Labrum with ciliary lines as usual. Median piece somewhat oblanceolate in outline, the lateral margins evenly convex; much narrower proportionately than in the preceding forms, being in the type about 2.3 times longer than the greatest width.

Mandible with eleven lamellae inclusive of the two reduced and modified ectal ones. The first has nineteen teeth. These are of almost uniform length, not being notably reduced in length proximad as in *E. turucanus*, etc. The margin below the first lamella is very minutely serrate for a short distance. A median lamella has the teeth reduced proximad as usual; number not precisely determined, but near forty.

Ectal angle of first maxilla scarcely at all produced, the corner being subrectangular or only slightly acute. Areas of coxosternum of second maxillae as usual.

Teeth of prosternum low and rounded. Teeth of prehensors normally developed.

Sternal impressions furcate but the branches short and weak, sometimes not easily seen, the angle obtuse.

Sternite of pregenital segment narrowed caudad as usual, lateral notching toward caudal end in the type scarcely evident. Coxopleural pores very numerous and small as usual.

Pairs of legs, forty-nine.

Length, 48 mm.

157. ECTOPTYX SIARONUS, sp. nov.

TYPE.— M. C. Z. 2,142. PARATYPES.— M. C. Z. 2,150, Fijis: Viti Levu, Saiaro (W. M. Mann).

Color much as usual. The black network on dorsum very dense, a median dorsal yellow line present in posterior region.

Head nearly 1.75 times longer than wide. Clypeal region with no small median chitinous spot such as present in the first three species (p. 65–67).

Labrum with ciliary lines conspicuously showing over outer two thirds or more of free margin on each side. Median piece much narrower than in the three species (p. 65–67); exposed area narrowly oblanceolate or spatulate; a narrow median part of anterior margin bulging forward; nearly three times as long as greatest width.

Mandible with sixteen or seventeen lamellae. Of these the first has nineteen teeth as in *E. turucanus*, these decreasing less in length proximad than in that species. A median lamella with near forty-two teeth, these proportioned nearly as in *E. turucanus*. Inner margin below first lamella entire, not at all serrate.

Teeth of prosternum and prehensors normal. Distal tooth of femuroid larger than the proximal one, but not proportionately so large as in, *e. g.*, *E. labasanus*. Teeth of next two joints rounded. Claw with a small rounded tooth in addition to the principal basal angulation.

Sternite of pregenital segment nearly as in *E. labasanus*. Coxopleural pores exceedingly numerous, small and minute.

Sternal impressions strongly furcate, the branches long, the angle obtuse.

Pairs of legs, forty-nine.

Length, to 90 mm.

LITHOBIOMORPHA.

Henicopidae.

158. Lamyctes tasmanianus, sp. nov.

Type.— M. C. Z. 2,152. Tasmania (G. H. Hardy).

General color above bright chestnut or almost cherry-red. A dusky line along the middorsum and the plates also irregularly bordered with the same. Head dusky back of ocellus on each side and across caudal border. Legs light brown, the last pairs bright yellow distally.

Prosternal teeth small, 2 + 2.

Antennae broken off in type, one entirely, the other beyond the sixteenth joint.

Posterior angles of none of the dorsal plates at all produced, the corners rectangular or narrowly rounded. Posterior margin of fourteenth tergite weakly incurved, that of the fifteenth more strongly so.

Coxal pores small but distinct, 4, 4, 4, 3.

Claw of female gonopods entire as usual, stout. Basal spines 2 + 2; short, subconical.

Length, nearly 9 mm.

Readily distinguished from *L. fulvicornis* Meinert, which it somewhat resembles, in the more elongate and obviously more slender tarsal joints, in having prosternal teeth 2 + 2 instead of 3 + 3, etc. Accessory claws much smaller than the principal, not approaching this in size as in *L. africana* Porat.

159. LAMYCTES ZELANDICUS sp. nov.

TYPE.— M. C. Z. 1,896. PARATYPES.— 2,035. New Zealand: Wellington, Tarawera Lake, Naiwa (W. M. Wheeler).

General color of dorsum brown of slightly reddish cast; legs and antennae fulvous.

Head subcordate, anteriorly mesally emarginate, a sulcus extending from emargination caudad to frontal suture.

Prosternal teeth distinct, acute, 2 + 2, the median sinus wide v-shaped, shallow.

Coxal pores very small, 2, 2, 2, 2 (1).

Basal spines of female gonopods 2 + 2.

Posterior angles of none of the dorsal plates at all produced, caudal margins straight.

Tarsal joints of anal legs abruptly considerably more slender than the metatarsus; first tarsal joint six times as long as thick.

Length (female type, not quite fully mature), 4.8 mm.

This species differs clearly from *L. fulvicornis* in the much more slender tarsal joints of the anal legs and in the shorter antennae composed of only twenty-two articles. It is obviously smaller than the Tasmanian species above described and is unlike *L. africana* in having the accessory claws of the legs very small.

160. LAMYCTES NAVAIANUS, sp. nov.

TYPE.— M. C. Z. 2,133. PARATYPES.— 2,134. Fijis. Navai (W. M. Mann).

Very similar to *L. munianus* but a smaller, less robust species. The color a little lighter brown without distinct darker markings excepting about eyes where black is pronounced. Antennae very short, composed of fewer articles, normally twenty-three or twenty-five. Prosternal teeth small, 2 + 2, the median incision somewhat less acute than in *munianus*. Caudal margins of ninth, eleventh, and thirteenth dorsal plates wholly straight. Tarsi as usual as are also the tibial spurs. Coxal pores 2, 2, 2, 2. Basal spines of female gonopods short, acute 2 + 2. Gonopods of male short, straight, triarticulate, ending in a short seta. Anal legs longer and more slender than in *L. fulvicornis*, especially the tarsal joints. Accessory claws short.

Length of male, 5 mm.; of female, 4.5 mm.

161. LAMYCTES MUNIANUS, sp. nov.

TYPE.— M. C. Z. 1,985. Fijis: Munia (W. M. Mann).

Above brown, darker along caudal border and forward more or less in middle region; head and antennae ferruginous, the head dusky over caudal part and especially above and in front of each ocellus; body at caudal end also tending toward ferruginous.

Prosternal teeth 2 + 2.

Antennae short, articles twenty-eight.

None of dorsal plates with angles produced, the caudal margins of ninth, eleventh, and thirteenth wholly straight, those of posterior principal plates slightly incurved.

Anterior tarsi entire as usual, the thirteenth and more caudal pairs biarticulate. First twelve pairs of legs with tibial spurs, others without.

Coxal pores 3, 3, 3, 3.

Basal spines of female gonopods short, acute, 2 + 2.

Length, 6 mm.

162. LAMYCTES EMARGINATUS (Newport).

Henicops emarginatus Newport, Ann. mag. nat. hist., 1844, **13**, p. 96.[1]
Lamyctes emarginatus Archey, Trans. proc. N. Z. inst., 1917, **49**, p. 308, fig. 6–9.[2]

LOCALITIES.— New Zealand:[1] Riccarton, Christchurch.[2]

163. LAMYCTES FULVICORNIS Meinert.

Nat. tiddskr., 1868, **5**, p. 266.

Lamyctes fulvicornis Attems, Fauna südw. Austr., 1911, **3**, p. 150.[1]

LOCALITIES.— W. Australia: Day Dawn, Mundaring Weir, Pinjarra, York, Beverley.[1]

This species seems to be principally a Palaearctic species, being widespread in Eurasia and North America.

163a. LAMYCTES FULVICORNIS HAWAIIENSIS Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 325.[1]

LOCALITIES.— Hawaiian Islands: Hawaii: Kona.[1]

164. LAMYCTES AFRICANUS (Porat).

Henicops africanus Porat, Öfvers. vet. ak. Förh., 1871, p. 119.
Lamyctes africana Attems, Fauna südw. Austr., 1911, **3**, p. 150.[1]

LOCALITIES.— W. Australia: Kalgoorlie, Donnybrook, Cranbrook, Albany.[1]

165. LAMYCTES NEOZELANICUS Archey.

Trans. proc. N. Z. inst., 1917, **49**, p. 309, fig. 10–12.[1]

LOCALITIES.— New Zealand: Waipara, Canterbury.[1]

166. LAMYCTES CHATHAMENSIS Archey.

Trans. proc. N. Z. inst., 1917, **49**, p. 309, fig. 13–15.[1]

LOCALITY.— Chatham Island.[1]

167. LAMYCTES KERMADECENSIS Archey.

Trans. proc. N. Z. inst., 1917, **49**, p. 311, fig. 16–17.[1]

LOCALITY.— Kermadec: Sunday Island.[1]

168. LAMYCTINUS COECULUS (Brölemann).

Lithobius coeculus Brölemann, Ann. Soc. Linn. Lyon, 1889, p. 271.
Lamyctinus caeculus Silvestri, Boll. Lab. zool. Portici, 1909, **4**, p. 39.[1]

LOCALITIES.— New South Wales: Sydney.[1] Hawaiian Islands: Oahu.[1]

169. WAILAMYCTES TRAILLI Archey.

Trans. proc. N. Z. inst., 1917, **49**, p. 312, fig. 18–24.[1]

LOCALITIES.— New Zealand: Stewart Island, Waipara.[1]

170. WAILAMYCTES HALLI Archey.

Trans. proc. N. Z. inst., 1917, **49**, p. 313, fig. 25–27.[1]

LOCALITIES.— New Zealand: Mt. Algidus, Rakaia Gorge.[1]

171. Paralamyctes validus Archey.

Trans. proc. N. Z. inst., 1917, **49**, p. 314, fig. 28–35.[1]

Localities.— New Zealand: Ohikaka, Ohakune,[1] Plummerton, Taumarunni (W. M. Wheeler).

The general color above dark chestnut with a median longitudinal darker stripe.

Head anteriorly truncate; a conspicuous median longitudinal sulcus from anterior margin caudad to beyond the frontal suture. Antennae moderate to long consisting of twenty-five articles, these mostly long.

Prosternum at middle anteriorly slightly concavely emarginate, gently convex on each side; teeth small, 6 + 6 to 9 + 9.

Thirteenth dorsal plate with caudal margin deeply concave; the ninth and eleventh plates caudally similarly emarginate but the curve somewhat deeper and more obtusely angular each side of the middle, more distinctly setting off the broad caudal processes; the sixth plate with caudal emargination deep but narrower than on the previously mentioned plates.

Tarsi of legs from first to fourteenth pairs inclusive biarticulate. Fifteenth pairs missing. Tibial spur on first fourteen pairs of legs. Principal claw long; accessory claws small, less than half the length of the principal.

Last four pairs of coxae deeply furrowed along caudal porigerous surface, the pores concealed in ventral view much as in species of Zygethobius, small or moderate, uniseriate.

Basal spines of female gonopods 2 + 2.

Length, 14 mm. to 18 mm.

172. Paralamyctes dubius Archey.

Trans. proc. N. Z. inst., 1917, **49**, p. 314, fig. 36.[1]

Locality.— New Zealand: Rhodes's Bush, Port Hills.[1]

173. Pleotarsobius heterotarsus (Silvestri).

Lamyctes heterotarsus Silvestri, Fauna Hawaiiensis, 1904, **3**, p. 325.[1]

Locality.— Hawaiian Islands: Hawaii: Kona.[1]

174. Henicops maculatus Newport.

Trans. Linn. soc. London, 1844, **19**, p. 372, pl. 33, fig. 27, pl. 40, fig. 3.[1] Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 453.[2]

LOCALITIES.— New South Wales: Southerland (W. M. Wheeler); Victoria: Gippsland, Fern Tree Gully, Wood's Point Road, Loch.[2] New Zealand: Wellington,[2] Island Bay (W. M. Wheeler). Tasmania.[1, 2]

175. HENICOPS DENTATUS Pocock.

Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 454.[1]

LOCALITY.— W. Australia: Perth.[1]

176. HENICOPS OLIGOTARSUS Attems.

Fauna südw. Austr., 1911, **3**, p. 150.[1]

LOCALITIES.— W. Australia: Wooroloo, Lion Mill, Mundaring Weir, East Fremantle, Jarrahdale, Brunswick, Bridgetown, Boyanup, Gooseberry Hill, Beverley, Albany.[1]

177. HENICOPS (?) IMPRESSUS (Hutton).

Trans. N. Z. inst., 1877, **10**, p. 288.[1]

LOCALITY.— New Zealand: Dunedin, Queenstown.[1]

178. HAASIELLA INSULARIS (Haase).

Henicops insularis Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 36.[1]

LOCALITY.— New Zealand: Auckland.[1]

ANOPSOBIIDAE.

TASMANOBIUS, gen. nov.

Characterized by having spiracles only on somites three, ten, and twelve, and the thirteenth legs with tarsi biarticulate.

Its relationship to other genera of the family may be shown as follows.

a. All tarsi undivided; third joint of anal legs unarmed.
Spiracles on third and tenth somites.........Catanopsobius Silvestri.
aa. Last two or three pairs of legs with tarsi divided; anal legs with third joint bearing a stout spine.

b. Spiracles on third, fifth, eighth, tenth, twelfth, and fourteenth somites. Thirteenth tarsi biarticulate.................. Anopsobius Silvestri.
bb. Spiracles only on somites three, ten, and twelve.
  c. Thirteenth tarsi entire..................... Dichelobius Attems.
  cc. Thirteenth tarsi biarticulate............... Tasmanobius, gen. nov.

GENOTYPE.— *T. relictus*, sp. nov.

179. TASMANOBIUS RELICTUS, sp. nov.

TYPE.— M. C. Z. 1,894. Tasmania (G. H. Hardy).

Color nearly chestnut throughout, legs and antennae scarcely paler.

Head narrowed forward in front of middle; a deep median longitudinal sulcus, hairs sparse and puncta few and indistinct. Antennae short, reaching upon third segment; composed of only fourteen articles.

Prosternum narrow anteriorly; teeth small and pale, 5 + 5.

Claws of legs long and slender, the accessory claws minute or obsolete. Coxae of fifteenth legs produced distally into a spinous process as in Dichelobius.

Coxal pores on last two pairs of coxae; 2, 2.

Gonopods of female of usual general structure; claw long and acute; basal spines 2 + 2, rather stout, subconical.

Length, 8.5 mm.

180. DICHELOBIUS FLAVENS Attems.

Fauna südw. Austr., 1911, **3**, p. 154, fig. 1–10.[1]

LOCALITY.— W. Australia: Eradu, Lion Mill, Jarrahdale, Donnybrook, Gooseberry Hill.[1]

181. ANOPSOBIUS NEOZELANICUS Silvestri.

Boll. Lab. zool. Portici, 1909, **4**, p. 45, fig. IV, 1–5.[1]

LOCALITIES.— New Zealand: Wellington,[1] Hokianga,[1] Taumarunni, Day's Bay near Wellington, Kaori Forest near Swainson, and Plummerton (W. M. Wheeler).

LITHOBIIDAE.

AUSTRALOBIUS, *gen. nov.*

Related to Lithobius *sens. str.* Antennae with but twenty-one or twenty-two articles in type. Ocelli few and large, in type 1 + 2, 2; single ocellus distinct, enlarged. Prosternal teeth numerous (*e. g.*, 5 + 5); no special ectal seta or spine detected in type, if present being indistinguishable from other setae. Posterior angles of ninth, eleventh, and thirteenth dorsal plates produced. Coxal pores in single series on last four pairs of coxae. None of coxae armed laterally or ventrally; anal pair armed dorsally with a small spine. Anal legs with two claws; spining weaker than in Lithobius, the ventral spines being 0, 1, 3, 2, 0, while the dorsals are represented by the formula 1, 2, 2, 0, 0. Anal legs of male simply thickened, not bearing any special lobes.

GENOTYPE.— *A. scabrior*, sp. nov.

182. AUSTRALOBIUS SCABRIOR, sp. nov.

TYPE.— M. C. Z. 2,169. Queensland: Kuranda, September, 1914. (H. L. Clark).

General color above brown of a purple tinge. The head and first dorsal plate much darker, blackish, the former lighter in a band along the frontal suture. The anterior legs flavous, the posterior pairs chestnut.

Antennae short, articles twenty-one on one side, twenty-two on the other. Ocelli pale, all large, the single one largest, the upper seriate ones somewhat larger than the lower; 1 + 2, 2. Prosternal teeth small, strongly chitinized, dark, 5 + 5.

Posterior angles of ninth, eleventh, and thirteenth dorsal plates distinctly but only moderately produced. All tergites strongly margined laterally, the margins high, less strongly so caudally. Plates conspicuously roughened with folds and tubercular elevations, the latter especially strongly developed on the posterior plates. Each plate shows a strong median longitudinal furrow and on each side of this two or more others, these more or less oblique.

Coxal pores 3, 5, 5, 4, circular to weakly elliptic.

Ventral spines of penult legs, 0, 1, 3, 3, 2; dorsal, 0, 0, 3, 1, 0; claws 2. Dorsal spines of thirteenth legs 0, 0, 3, 2, 1, the tibial spine on the caudal side; of the twelfth, 0, 0, 3, 2, 1. First twelve pairs of legs having tibia armed above with but a single spine, this in all on the anterior side.

Length, near 12.2 mm.

183. AUSTRALOBIUS LORIAE (Silvestri).

Lithobius loriae Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 623.[1]

LOCALITY.— New Guinea: Moroka.[1]

The species is referred to Australobius with some doubt as only the female is known, whereas the genotype is a male.

WALESOBIUS, gen. nov.

Related to Australobius but differing in the more numerous articles of antennae (typically twenty-six to twenty-eight), in having the prosternal teeth only 2 + 2, and in having the fourth joint of the anal legs in the male with a special nodular process at its distal end. Posterior angles of ninth, eleventh, and thirteenth dorsal plates produced. Coxal pores in a single series on last four pairs of legs. Posterior coxae not armed laterally. Ventral spines of anal legs 0, 1, 3, 3 (2), 1. Claw of female gonopods partite; basal spines 2 + 2.

GENOTYPE.— *W. sydneyensis* (Pocock).

184. WALESOBIUS SYDNEYENSIS (Pocock).

Lithobius sydneyensis Pocock, Ann. mag. nat. hist., 1891, ser. 6, **8**, p. 153.[1]

LOCALITY.— New South Wales: Sydney.[1]

185. LITHOBIUS ARGUS Newport.

Trans. Linn. soc. London, 1844, **19**, p. 369.[1]

LOCALITY.— New Zealand: near Wellington.[1]

Newport regarded this species as very close to *L. forficatus* (Linné). From the other known lithobiid species of the Australian region it differs in the greater number of ocelli (twenty-eight or thirty on each side). The prosternal teeth are 5 + 5. Posterior angles of ninth, eleventh, and thirteenth dorsal plates produced (*fide* Pocock).

KAUABIUS, gen. nov.

This genus seems nearest the North American Tidabius. Antennae similarly composed of above twenty-five articles. Ocelli more numerous, seventeen to twenty-one in five series as against nine to fourteen in mostly three series. Prosternal teeth similarly 2 + 2. Angles of none of dorsal plates produced. In all known species of Tidabius the coxae are wholly unarmed and the spines of the anal legs above are fixed at 0, 0, 2, 0, 0, while the ventral are 0, 1, 3, 1, 0 or less often 0, 1, 3, 2, 0; in the type of the present genus the anal coxae are dorsally armed, while the dorsal spines of the anal legs are 1, 0, 3, 0, 0, and the ventral 0, 1, 3, 3, 1. The genotype is notably larger than the known species of Tidabius, being 16 to 20 mm. in length, while the known species of Tidabius never exceed 10 mm.

GENOTYPE.— *K. hawaiiensis* (Silvestri).

186. KAUABIUS HAWAIIENSIS (Silvestri).

Lithobius hawaiiensis Silvestri, Fauna Hawaiiensis, 1904, **3**, p. 324.[1]

LOCALITIES.— Hawaiian Islands: Kauai: Makaveli, and Koholuamano.[1]

ETHOPOLIDAE.

187. BOTHROPOLYS OAHUANUS, sp. nov.

Lithobius asperatus Attems (non Koch), Zool. jahrb. Syst., 1903, **18**, p. 92.

A number of species occurring in Japan, China, the Philippines, etc., seem to have been confused under the name *L. asperatus* Koch. It is difficult to believe that the species described by Attems from the Hawaiian Islands (*Loc. cit.*) is the same as that described by him from Japan in 1909 (Arkiv zool., **5**, no. 3, p. 22). Of the first Attems states that the posterior angles of the seventh, ninth, eleventh, and thirteenth dorsal plates are produced, of the second that the sixth, seventh, ninth, eleventh, and thirteenth are produced, though some variability in the angulation of the sixth plate may be responsible for this. He gives the coxae of the last two pairs of legs in the Hawaiian form as unarmed ventrally, while they are armed in the Japanese form, the respective formulae for the anal legs being $\frac{1\text{-}2, 0, 2, 1, 0}{0, 1, 3, 1, 0}$ and $\frac{1, 0, 3, 1, 0}{1, 1, 3, 2, 1}$, and for the penult $\frac{1\ 0, 3, 1, 0}{0\ 1, 2, 1, 0}$ and $\frac{1, 0, 3\ 1, 1}{1, 1, 3, 2, 1}$. Assuming Attems's observations to be accurate, it appears impossible that these two forms should be the same species. Furthermore, both differ from the original description by Koch and from that given by Haase (Abhandl. Mus. Dresden, 1887, **5**, p. 33) of Philippine specimens. Haase gives the ventral spines of the anal legs as 1, 1, 3, 2, 0, as does also Koch excepting that the latter fails to mention the spining of the first two joints. For the Hawaiian form I am here accordingly proposing a new name, to be used at least pending further elucidation of the Ethopolidae of Japan and the Pacific islands.

It seems also highly probable that the Japanese species described by Attems in 1903 is not the true *asperatus* of Koch and Haase, not only because of the marked difference in the spining of the legs as above indicated but also because of the fewer ocelli in the former, thirteen in three series as against nineteen to twenty-three in *asperatus*. The Japanese species described by Attems may accordingly bear the name *Bothropolys spinosior*, nom. nov.

188. ETHOPOLYS RUGOSUS (Meinert).

Lithobius rugosus Meinert, Nat. tidsskr., 1872, 3R., **8**, p. 306.[1]

Lithobius xanti Stuxberg (an Wood?), Öfvers. Vet. akad. Förh., 1875, no. 3, p. 10.

LOCALITY.— Hawaiian Islands: Oahu.[1]

Stuxberg (*Loc. cit.*, p. 20) identifies *rugosus* with the Californian species *E. xanti* (Wood); but until Hawaiian material is restudied the identity of the two forms must remain questionable.

CERMATOBIIDAE.

189. CERMATOBIUS MARTENSI Haase.

Abhandl. Mus. Dresden, 1887, **5**, p. 30, pl. 2, fig. 38.[1]

LOCALITY.— Adenara Island.[1]

CRATEROSTIGMORPHA.

CRATEROSTIGMIDAE.

190. CRATEROSTIGMUS TASMANIANUS Pocock.

Quart. journ. micros. sci., 1902, n. s., **45**, p. 423.[1] Archey, Trans. proc. N. Z. inst., 1917, **49**, p. 319, fig. 1–4.[2]

LOCALITIES.— Tasmania.[1] New Zealand: South Island.[2]

SCUTIGEROMORPHA.

SCUTIGERIDAE.

191. BALLONEMA GRACILIPES Verhoeff.

Sitzungsb. Gesellsch. nat. freunde, 1904, p. 261.[1]

LOCALITY.— New Guinea: Astrolabe Bay.[1]

192. PARASCUTIGERA DAHLI Verhoeff.

Sitzungsb. Gesellsch. nat. freunde, 1904, p. 263.[1]

LOCALITY.— Bismarck Archipelago: Ralum.[1]

193. PODOTHEREUA INSULARUM Verhoeff.

Sitzungsb. Gesellsch. nat. freunde, 1905, p. 20.[1]

LOCALITY.— Bismarck Archipelago.[1]

194. ALLOTHEREUA MACULATA (Newport).

Cermatia maculata Newport, Ann. mag. nat. hist., 1844, **13**, p. 96.[1]
Cermatia australiana Newport, Trans. Linn. soc. London, 1844, **19**, p. 359.[2]
Cermatia latreillei Newport, *Ibid.*, p. 357.[3]
Scutigera maculata Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 23, pl. 2, fig. 36.[4] Daday, Term. füz., 1891, **14**, p. 192.[5] Pocock, Willey's Zool. results, 1898, pt. 1, p. 60.[6] Pocock, Ann. mag. nat. hist., 1901, ser. 7, **8**, p. 451.[7] Attems, Fauna südw. Austr., 1911, **3**, p. 150.[8] Brölemann, Records Austr. mus., 1912, **9**, p. 37.[9]

LOCALITIES.— New South Wales: Sydney,[5] Heathcote (W. M. Wheeler), Peak Dawns,[4] Bourke.[9] South Queensland.[7] Victoria: Narre Warren,[7] Loch.[7] Walhalla.[7] W. Australia:[2] Swan River,[1] Perth,[6] Subiaco, East Fremantle, Jarrahdale, Harvey, Collie, Bunbury, Upper Blackwood, Bridgetown, Donnybrook.[8] New Britain.[6] Australia.[3]

195. ALLOTHEREUA (?) SIMPLEX (Haase).

Scutigera simplex Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 26, pl. 1, fig. 29.[1]

LOCALITY.— New South Wales: Sydney.[1] S. Australia: Adelaide.[1]
Of uncertain position. Quite possibly identical with the preceding species.

196. ALLOTHEREUA (?) LESUERI (Lucas).

Scutigera lesuerii Lucas, Anim. artic. Crust. etc., 1840, p. 538.[1] Haase, Abhandl. Mus. Dresden, 1887, **5**, p. 21, pl. 2, fig. 35.[2]

LOCALITY.— Australia.[1] Queensland: Rockhampton.[2]
The position of this species must be doubtful until it is restudied.

197. ALLOTHEREUA (?) SMITHI (Newport).

Cermatia smithi Newport, Ann. mag. nat. hist., 1844, **13**, p. 96.[1]

LOCALITY.— New Zealand.[1]
Also of doubtful generic position.

198. GONETHINA FIJIANA, sp. nov.

TYPE.— M. C. Z. 2,131. Fijis: Mt. Victoria (W. M. Mann).

Dorsum somewhat dusky brown, somewhat paler, more greyish, in mid-dorsal region, especially over the saddles, but a median longitudinal pale stripe not sharply set off, though on some tergites a brighter line each side of median stripe leaves a darker median area geminate by a longitudinal pale line. Legs with darker markings, especially on femora and prefemora but the definite arrangement of these is difficult to make out. Antennae yellow.

First division of antennae with forty-two articles; second division with near eighty; third division incomplete.

Stoma saddles moderately elevated. Stoma small, on most plates attaining and projecting into the caudal emargination.

First tarsus of first legs consisting of fourteen articles, the second of thirty-two. First tarsus of second legs composed of eleven or twelve articles, the second of thirty. First tarsus of third legs of ten, the second of twenty-nine. None of tarsi present with first division ending in spines but last several pairs of legs missing.

Length, 11 mm.

The type, not fully mature, seems to conform most closely to Gonethina, a genus previously known from the West Indies, though without knowledge of the gonopods of the female this cannot be wholly certain. From *G. grenadensis* differing in coloration and in the coarser, more spinescent hair of the tergites as well as in other details.

DIPLACROPHOR, gen. nov.

A genus of the Scutigerini resembling Lassophora of Madagascar in having the tarsal pegs of the anterior legs alternating regularly in size. Unlike that genus but agreeing with Scutigera in lacking any spines in the series of setae of the prefemur of first legs. Agreeing also with Scutigera in the form and general number of articles in the divisions of antennae. Differing from the two genera mentioned in having spines of the middle tergites, which are numerous and closely arranged on the margins, each accompanied by a short hair-point as in Allothereua, etc.

Genotype.— *D. nitens*, sp. nov.

199. DIPLACROPHOR NITENS, sp. nov.

TYPE.— M. C. Z. 2,132. Solomons: Tulagi (W. M. Mann).

Dorsum with a longitudinal light greenish grey stripe enclosing two black lines between which is a somewhat orange colored median line; the stripe limited on each side by an edging of black. Lateral region on each tergite for the most part reddish but toward each side with two greenish grey spots edged with black, the black color about the two connected. Dorsum of head except laterally greyish green enclosing two longitudinal red stripes edged in part with black. Legs greenish grey with deeper colored annuli of which those of the prefemur and femur are narrow; each tibia with two deeper and much longer dark annuli occupying the entire joint excepting a narrow light median annulus and a similarly narrow distal one. Tips of tarsi somewhat rufous.

First division of antennae composed of seventy-two articles which, excepting the nodal and basals, are very short; second division missing.

First tarsal division of first legs consisting of thirteen articles, the second of thirty-four. In the second legs the first tarsal division also consists of thirteen segments, the second of thirty-six. In the third legs the first of eleven segments, the second of thirty-two. In the fourth the first of nine segments, the second of thirty-one. The fifth have seven in the first and twenty-eight in the second; the sixth six in the first and twenty-eight in the second; the seventh, six and twenty-seven respectively; the eighth, seven and twenty-eight. All stomata rather short, reaching caudal margin and projecting a little into the caudal excavation. Anal styles of male slender, tapered, the anterior pair a little longer and curved, the posterior straight.

Length (male), 13 mm.

200. SCUTIGERA (?) STRABA (Wood).

Cermatia straba Wood, Journ. Acad. nat. sci. Phil., 1862, ser. 2, **5**, p. 11.[1]

LOCALITY.— Hawaiian Islands: Oahu.[1]

201. SCUTIGERA (?) HISPIDA Haase.

Abhandl. Mus. Dresden, 1887, **5**, p. 20, pl. 2, fig. 34.[1]

LOCALITIES.— New Guinea.[1] Caroline Islands: Ruk.[1]

SYMPHYLA.

SCOLOPENDRELLIDAE.

202. HANSENIELLA NEOZELANICA, sp. nov.

TYPE.— M. C. Z. 2,054. PARATYPES.— M. C. Z. 2,055. New Zealand: Day's Bay, near Wellington (W. M. Wheeler).

A species close to *H. plebeia* (Hansen) and *H. nivea* (Scop.). The latter differs from *plebeia* and the present species in having the cerci with but few setae of which the distal are longer than the depth of the cerci and in having the metatarsus of the last legs bearing only two setae in the anterodorsal row, these being but little shorter than the diameter of the joint. The present species differs from *plebeia, e. g.* in having six setae in the anterodorsal row on the metatarsus of the last legs instead of four and in the character of the claws. The anterior accessory claw is longer proportionately to the principal one and the anterior seta is well developed, equalling the accessory claw in length. Posterior exopods well developed, in length somewhat exceeding the depth of the tarsi. Cerci slender, about 5.5 times longer than the greatest depth and thus much more slender than in the Australian species *H. indecisa* (Attems), the cerci of the latter differing also in the much fewer setae. Setae numerous, the distal ones clearly exceeding the diameter of cercus at their level.

Length, near 6 mm.

203. HANSENIELLA CALDARIA (Hansen).

Quart. journ. micros. sci., 1903, **47**, p. 36, pl. 2, fig. 3a–3g.

Scutigerella caldaria Archey, Trans. proc. N. Z. inst., 1914, **47**, p. 293, fig. 1–6.[1]

LOCALITY.— New Zealand: Central Otago: Lake Wakatipu, Ben Lomond.[1]

TASMANIELLA, gen. nov.

A genus like Neoscutigerella and Hanseniella (Journ. Linn. soc. London. Zool., 1914, **32**, p. 197) in having no median excavation in the caudal border of the last plate and thus standing apart from Scutigerella proper. It is like Neoscutigerella in having the setae of the dorsal scuta of a special type; but differs clearly, *e. g.*, in having these much larger, rod-like but narrowing toward base, those in a series across the caudal border much exceeding the others in length; all directed caudad. On the first three plates an especially long tapering seta arising at each caudal corner and extending dorsad and somewhat forward, a corresponding one on fourth tergite smaller. Last tergite with a pit-like depression on the median part of caudal border.

GENOTYPE.— *T. hardyi*, sp. nov.

204. TASMANIELLA HARDYI, sp. nov.

TYPE.— M. C. Z. 2,053, Tasmania (G. H. Hardy).

Setae of inner surface of all joints of antennae directed obliquely forward, of ordinary length. Setae of middle whorl of articles of antennae of same length above and below. Setae of head much finer than those of tergites. First legs smaller than the second but in no sense dwarfed; without exopods. Exopods on posterior legs well developed. Anal legs with anterior claw slender, more than half as long as the other one. Claws of first legs slender with the posterior one about three fourths as long as the anterior one. Cerci with a distinct clear area at distal end not lined or striped, but this part weakly ringed with constricting sulci; setae moderately numerous, the more distal ones approaching in length the depth of the cerci proximally.

Length, about 5 mm.

205. SCUTIGERELLA INDECISA Attems.

Fauna südw. Austr., 1911, **3**, p. 165.[1]

LOCALITIES.— W. Australia: Lion Mill, Guildford, Harvey, Brunswick, Boyanup, Gooseberry Hill.[1]

PAUROPODA.

PAUROPODIDAE.

206. EURYPAUROPUS SPECIOSUS Harrison.

Proc. Linn. soc. N. S. W., 1914, **39**, p. 624, pl. 71, fig. 18–21.[1]

LOCALITIES.— New South Wales: Lobster Beach, Broken Bay.[1]

207. PAUROPUS AMICUS Harrison.

Proc. Linn. soc. N. S. W., 1914, **39**, p. 617, pl. 70, fig. 1–11.[1]

LOCALITY.— New South Wales: Lindfield, Broken Bay.[1]

208. PAUROPUS AUSTRALIS Harrison.

Proc. Linn. soc. N. S. W., 1914, **39**, p. 620, pl. 71, fig. 12–14.[1]

LOCALITY.— Australia: New South Wales: Lindfield, Broken Bay.[1]

209. PAUROPUS NOVAEHOLLANDIAE Harrison.

Proc. Linn. soc. N. S. W., 1914, **39**, p. 622, pl. 71, fig. 15–16.[1]

LOCALITY.— New South Wales: Broken Bay.[1]

210. PAUROPUS BURROWESI Harrison.

Proc. Linn. soc. N. S. W., 1914, **39**, p. 623, pl. 71, fig. 17.[1]

LOCALITY.— New South Wales: Broken Bay.[1]

DIPLOPODA.

PSELAPHOGNATHA.

POLYXENIDAE.

211. POLYXENUS HAWAIIENSIS Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 327.[1]

LOCALITY.— Hawaiian Islands: Oahu: Kaala, 2,000 ft.[1]

212. MONOGRAPHIS SCHULTZEI Attems.

Schultze's Forschungsreise Südafrika, 1909, **2**, p. 36, fig. 67–70. Attems, Fauna südw. Austr., 1911, **3**, p. 167.[1]

LOCALITY.— W. Australia: Torbay.[1]

Otherwise known only from southwestern South Africa, the type-locality.

LOPHOPROCTIDAE.

213. TRICHOPROCTUS BIROE Silvestri.

Term. füz., 1899, **22**, p. 205, pl. 9, fig. 3, 4.[1]

LOCALITY.— New Guinea: Tamara Island.[1]

ONISCOMORPHA.

SPHAEROTHERIDAE.

214. CYLIOSOMA KURANDANUM, sp. nov.

TYPE.— M. C. Z. 4,696. Queensland: Kuranda (H. L. Clark).

The general color above is dull chestnut, the caudal border and the overlapped anterior region darker. Legs fulvous, the tarsi and the antennae of greenish cast.

Labral margin deeply excavated at the middle, the black tooth projecting into the incision short, obtuse, leaving most of the incision open. Surface of head shining; puncta above sparse, not deep, but toward labral margin becoming numerous. Antennal fossa basin-like, closed in front as well as behind by a ridge. Antennae very short as usual; attenuated distad, the sixth article more slender than the more proximal ones, cylindrical; seventh article short, rounded, with four sensory cones.

Collum with anterior margin concave at the sides and bulging convexly forward at the middle. Caudal margin between angles semicircular. Protruding median region of anterior border set off by a fine transverse sulcus, but the latter short, not extending to the side regions. Surface smooth and shining, weak puncta present in a series across anterior border but absent or obsolete elsewhere.

Second tergite very large; an anterior elevated border set off by a furrow that is narrow and shallow in the middle region but widens and deepens down the sides as usual; surface smooth and shining, not punctate. Surface of the other tergites also smooth and shining and without puncta.

Surface of last plate similar to that of the others. Lower border set off by a very weak oblique depression.

Tarsus of legs with a single spine above and well separated from the claw.

Length (female), near 33 mm.; width, 16 mm.

This species may be easily separated from those heretofore described by the structure of the vulva. In this the basal division is large with the two halves equal or very nearly so, not with the outer one much the larger and overlapping the mesal. The distal piece has the usual triangular form; its base obviously narrower than the width of the basal division; its outer side more oblique than the mesal; dark, strongly chitinous.

215. CYLIOSOMA PACHYGON, sp. nov.

TYPE.— M. C. Z. 4,697. PARATYPE.— M. C. Z. 4,698. Queensland: Cooktown, 1896 (A. G. Mayer).

Color light chestnut of a somewhat ferruginous cast, the anterior plates darker chestnut, the caudal borders of tergites black. Legs pale ferruginous. Head like the tergites but the collum darker, blackish.

Median emargination of labrum subquadrate, the median tooth narrowly conical, reaching level of mouth of excision. Surface across and above labrum and laterally toward eyes coarsely deeply punctate, but the middle region smooth and shining with the puncta few and small. Antennal furrows deep, pit-like, facing directly laterad toward the wing of the second tergite. Antennae short, tapered distad as usual; the terminal article very short, its sensory cones stout and contiguous or subcontiguous.

The collum of same general form as in *C. kurandanum.* Projecting anterior median border bent more strongly ventrad; set off similarly by a fine transverse sulcus. Coarse puncta in a series across anterior border and a few on middle part of plate, the latter otherwise smooth and shining.

Second tergite with margination as usual, the depression caudad of and above it of usual general form but much shallower than in *C. kurandanum* and scarcely present in the middle region. A vague transverse ridge a little behind caudal limit of anterior third of length; surface smooth and shining, weakly coriariously marked behind the ridge, more roughened in front of it. Other plates smooth and shining.

Anal tergite also smooth and shining. Caudal margin very obtusely slightly angular at middle, the plate depressed above the angle.

Tarsi with spine above claw as usual.

Length (male), near 24 mm.; width, 11.8 mm. Another specimen, an adult male, is only 20 mm. long and 9.2 mm. wide. It is darker than the type.

Clearly differentiated from other known species in the form of the male gonopods. The posterior pair is characterized in having the movable finger exceptionally large and heavy and somewhat clavately widened above the base, much exceeding the immovable finger; the latter of a stout conical form, making a pronounced angle with the axis of the basal part of the joint. The anterior gonopods greatly smaller than the posterior pair; the immovable finger flattened, apically rounded; the movable finger pointed distad, the tip curving adaxially to or over apex of immovable finger.

216. CYLIOSOMA TARGIONI Silvestri.

Bull. Soc. ent. Ital., 1897, **29**, p. 226, fig. 1–3.[1]

Cyliosoma targioni Silvestri, Boll. Lab. zool. Portici, 1917, **12**, p. 69.

LOCALITY.— Queensland: Cairns.[1]

217. CYLIOSOMA FROGGATTI Silvestri.

Boll. Lab. zool. Portici, 1917, **12**, p. 70.[1]

LOCALITY.— New South Wales: Richmond River.[1]

218. CYLIOSOMA UNICOLOR Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 16, pl. 2, fig. 80–82.[1]

Cyliosoma queenslandiae Brölemann, Records Austr. mus., 1913, **10**, p. 80.[2]

LOCALITY.— Queensland: Gayndah.[1, 2]

219. CYLIOSOMA SENNAE Silvestri.

Bull. Soc. ent. Ital., 1897, **29**, p. 227, fig. 4–6.[1]

Cyliosoma penrithensis Brölemann, Records Austr. mus., 1913, **10**, p. 85.[2]

LOCALITIES.— Queensland: Cairns.[1] New South Wales: Penrith,[2] Cambewarra.[2]

220. CYLIOSOMA SJÖSTEDI Silvestri.

Boll. Lab. zool. Portici, 1917, **12**, p. 73.[1]

LOCALITY.— Queensland: Cardwell.[1]

221. CYLIOSOMA ANGULATUM (Butler).

Sphaerotherium angulatum Butler, Trans. Ent. soc. London, 1878, p. 299.[1]

LOCALITY.— Queensland: Rockhampton.[1]
This is the type of the genus.

222. CYLIOSOMA (?) CONVEXUM (C. Koch).

Sphaerotherium convexum C. Koch, Syst. Myr., 1847, p. 100.[1]

LOCALITY.— Australia.[1]

223. CYLIOSOMA (?) FRATERNUM Butler.

Ann. mag. nat. hist., 1873, ser. 4, **10**, p. 359.[1]

LOCALITY.— Victoria.[1]

224. CYLIOSOMA (EPICYLIOSOMA) ALBERTISI (Silvestri).

Zephronia albertisi Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 635.[1]

LOCALITY.— Queensland: Somerset.[1]

225. PROCYLIOSOMA LEIOSOMA (Hutton).

Sphaerotherium leiosomum Hutton, Ann. nat. hist., 1877, ser. 4, **20**, p. 116.[1]

LOCALITY.— New Zealand: Dunedin.[1]

226. PROCYLIOSOMA LEAE Silvestri.

Boll. Lab. zool. Portici, 1917, **12**, p. 77.[1]

LOCALITY.— Tasmania: Hobart.[1]

227. PROCYLIOSOMA TASMANICUM Silvestri.

Boll. Lab. zool. Portici, 1917, **12**, p. 78.[1]

LOCALITY.— Tasmania: Hobart.[1]

228. PROCYLIOSOMA TUBERCULATUM Silvestri.

Boll. Lab. zool. Portici, 1917, **12**, p. 80.[1]

LOCALITIES.— New Zealand: Cape Maria Van Diemen, Marlborough (Croixelles), French Pass. Stephen Island.[1]

229. PROCYLIOSOMA DELACYI (White).

Zephronia delacyi White, Ann. mag. nat. hist., 1859, ser. 3, **3**, p. 106,[1] pl. 7, fig. 2, 2a.

LOCALITY.— New Zealand: Nelson, Waikato.[1]

230. PROCYLIOSOMA STRIOLATUM (Pocock).

Cyliosoma striolatum Pocock, Ann. mag. nat. hist., 1895, ser. 6, **16**, p. 414.[1]
Procyliosoma striolatum Silvestri, Boll. Lab. zool. Portici, 1917, **12**, p. 83.[1, 2]

LOCALITY.— New Zealand: Greymouth,[1] French Pass.[2]

231. PROCYLIOSOMA NOVAE ZELANDICA (Kirk).

Sphaerotherium novae zelandica Kirk, Trans. proc. N. Z. inst., 1886, **18**, p. 139.[1]
Procyliosoma novae zelandica Silvestri, Boll. Lab. zool. Portici, 1917, **12**, p. 84.[2]

LOCALITIES.— New Zealand: Tinokori Hills, Rimotaka Mts., Wellington, Stratford, New Plymouth.[1, 2]

232. PROCYLIOSOMA (SYNCYLIOSOMA) AURIVILLI Silvestri.

Boll. Lab. zool. Portici, 1917, **12**, p. 85.[1]

LOCALITY.— Queensland: Cape York.[1]

233. CASTANOTHERIUM CELEBENSE Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 15, fig. xx–xxii.[1]

LOCALITY.— Celebes: Minahassa.[1]

234. CASTANOTHERIUM DISTINCTUM Carl.

Rev. Suisse zool., 1912, **20**, p. 106, pl. 6, fig. 37–40.[1]

LOCALITY.— Celebes: Ussu.[1]

235. CASTANOTHERIUM SUSPECTUM Carl.

Rev. Suisse zool., 1912, **20**, p. 109.[1]

LOCALITY.— Celebes: Mapane on Gulf of Tomini.[1]

236. CASTANOTHERIUM LAEVE Carl.

Rev. Suisse zool., 1912, **20**, p. 110, fig. 1–3.[1]

LOCALITY.— Celebes: Matinangkette.[1]

237. CASTANOTHERIUM CRINICEPS (Attems).

Zephronia criniceps Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 482, pl. 21, fig. 8.[1]

Castanotherium criniceps Carl, Rev. Suisse zool., 1912, **20**, p. 112, fig. 4.[2]

LOCALITIES.— Celebes: Minahassa,[1] Soputan,[2] Tomohon.[2]

238. CASTANOTHERIUM PILOSUM Carl.

Rev. Suisse zool., 1912, **20**, p. 114, fig. 5.[1]

LOCALITY.— Celebes: Bontorio, Bowanglangi.[1]

239. CASTANOTHERIUM ORNATUM Carl.

Rev. Suisse zool., 1912, **20**, p. 116, fig. 32–41.[1]

LOCALITY.— Celebes: Bontorio.[1]

240. CASTANOTHERIUM DECORATUM Carl.

Rev. Suisse zool., 1912, **20**, p. 118, fig. 7.[1]

LOCALITY.— Celebes: Loka.[1]

241. CASTANOTHERIUM BOËTONENSE Carl.

Rev. Suisse zool., 1912, **20**, p. 119, fig. 8.[1]

LOCALITY.— Boëton Island, near Celebes.[1]

242. CASTANOTHERIUM SPARSEPUNCTATUM Carl.

Rev. Suisse zool., 1912, **20**, p. 120, fig. 9.[1]

LOCALITY.— Celebes: Bolowonglangi.[1]

243. CASTANOTHERIUM STELLATUM Carl.

Rev. Suisse zool., 1912, **20**, p. 122, fig. 10.[1]

LOCALITY.— Celebes: Loka.[1]

244. CASTANOTHERIUM (?) AMYTHRA (Attems).

Zephronia amythra Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 482, pl. 21, fig. 8.[1]

LOCALITY.— Halmaheira: Soah Konorah.[1]

245. ZEPHRONIA (?) LARVALIS Butler.

Trans. Ent. soc. London, 1878, p. 301.[1]

LOCALITY.— Queensland: Torres Strait.[1]

GLOMERIDAE.

246. NESOGLOMERIS SARASINORUM Carl.

Rev. Suisse zool., 1912, **20**, p. 101, pl. 6, fig. 36.[1]

LOCALITY.— Celebes: Loka.[1]

247. NESOGLOMERIS KIRROPEZA (Attems).

Glomeris kirropeza Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 480.[1]
Nesoglomeris kirropeza Carl, Rev. Suisse zool., 1912, **20**, p. 102.[2]

LOCALITIES.— Celebes: Minahassa,[1] Lokon, Soputan.[2]

248. NESOGLOMERIS EREMITA Carl.

Rev. Suisse zool., 1912, **20**, p. 102.[1]

LOCALITY.— Celebes: Bowanglangi.[1]

249. NESOGLOMERIS ALTICOLA Carl.

Rev. Suisse zool., 1912, **20**, p. 103.[1]

LOCALITY.— Celebes: Bowanglangi.[1]

COLOBOGNATHA

POLYZONIIDAE.

250. SIPHONOTUS MEDIUS, sp. nov.

TYPE.— M. C. Z. 4,582. PARATYPE.— M. C. Z. 4,583. Fijis: Lasema (W. M. Mann).

The general color of the ground is fulvous, somewhat more orange anteriorly; the anterior tergites areolated with a network of violet-brown; the antennae also darkened with the same color, the terminal articles more strongly so; head also pigmented in a narrow band down each side and in two lines on the face.

Head narrow; narrowed ventrad with the sides straight throughout; clothed with short hairs both in front and behind and with two long setae between the eyes. Antennae extending a little below lower end of face, clavate, articles short and broad.

Dorsum strongly arched as usual. Venter flat, the tergites of the anterior segments extending a little below its level. Prozonites depressed a little below level of metazonites, though less so than, *e. g.*, in the American *S. purpureus*. First tergite with anterior and lateral margins together forming a semicircular curve; equal in length to the two succeeding tergites together. Penult tergite much longer than the preceding one. Dorsum throughout with numerous but not dense short straight hairs, some on last segment both above and below longer than the others.

Male gonopods reserved for subsequent description.

Number of segments, forty-eight to fifty.

Length, up to about 8 mm.

A species less pigmented than the Javan *S. formosus* and *elegans* Pocock but more pigmented than *S. dempuranus* and *celebensis* Carl.

251. SIPHONOTUS FIJIENSIS, sp. nov.

TYPE. — M. C. Z. 4,584. PARATYPE. — 4,585. Fijis: Nansori (W. M. Mann).

This species is similar in general to *S. intermedius* but is larger, of a darker, ferruginous color. Each somite above with somewhat darker, brownish markings areolated as usual, these darker markings on all somites, not confined to the anterior ones as in *intermedius*, and showing distinctly only under the microscope. Antennae with violet-brown pigmentation over a lighter background. Head marked similarly to *S. intermedius*.

Antennae longer than in the preceding species, with article proportionately more elongate, ordinarily exceeding the head beneath by fully the last two articles; more uniformly cylindrical than in the other species. Head in front with numerous short hairs and two longer ones between eyes.

The hairs of the dorsum much as in *S. intermedius*. The penult tergite proportionately to the adjacent tergites is obviously shorter, the ratio of the last three tergites to each other usually about as 6:9:7. The anal tergite projects less over the valves. Prozonites in general more deeply depressed than in the other species.

The male gonopods are more prominent. The anterior pair in lateral view not narrowed distad, being in fact somewhat expanded above base. Styles not projecting ventrad beyond anterior gonopods, distally extending cephalad.

Number of segments more numerous, from forty-five to sixty-seven in the males.

Length, up to 10 mm.

252. SIPHONOTUS SOLITARIUS, sp. nov.

TYPE.— M. C. Z. 4,586. Fijis: Nansori (W. M. Mann).

Color fulvous, darker markings vague. Violaceous dottings on antennae obscure.

Proportions of antennae and its articles nearly as in *S. fijiensis*.

Prozonites less depressed than in the preceding species, the dorsal line of each tergite being nearly straight. Last segment proportionately more slender.

The gonopods are longer. Anterior pair a little enlarged distad, in side view distally subtruncate. Styles carried well below the anterior gonopods and distally curved with the concavity caudad.

Number of segments (male) fewer, being only forty-three as against a minimum of fifty-four noted in the other species.

Length, near 6 mm.

A smaller and paler species than *S. fijiensis*.

253. Siphonotus senior, sp. nov.

Type.— M. C. Z. 4,587. Paratypes.— M. C. Z. 4,588. Fijis: Nadarivatu (W. M. Mann).

Color in general light ferruginous with the usual violaceous brown darker pigment over the background, this more dense anteriorly; antennae colored with same pigment of which there are also the usual markings on the head.

Antennae short and stout, a little clavate; articles short. Face narrow, evenly attenuated ventrad.

Prozonites in anterior region strongly depressed below the level of the metazonites, less noticeably so in posterior region. Last tergite free above, equalling the valves.

Number of segments in the type, a female, eighty-five.

Length, near 16 mm.[1]

An obviously larger, more robust species than those above described. Characterized in having the venter concave, the lower edges of the tergites extending below the level of the sternites along entire length of body, instead of only anteriorly. Hairs of dorsum very short and sparse. Hairs on front of head short, rather dense above, fewer on caudal surface.

254. Siphonotus frater, sp. nov.

Type.— M. C. Z. 4,589. Fijis: Levuka (W. M. Mann).

A large species like *S. senior*. More uniformly colored than that species. While the depth of the orange or light color varies, the violaceous mottlings or dots are scarcely evident excepting on the antennae. Like *S. senior* the venter is concavely upraised above the level of the lower edges of the tergites but in the posterior region much less so than in the other species.

The head is proportionately longer than in *S. senior*. Whereas in the latter species the distance from the eye to the lower end of the head is equal to the length of the first tergite, in *frater* the length is greater, exceeding the first tergite in about the ratio 17 : 14.

The anal somite appears shorter and broader, with the annulus less shortened ventrally. Body in general broader in proportion to length.

Number of segments (female type), sixty-three.

Length, near 12 mm.

255. SIPHONOTUS ETHOCEPS, sp. nov.

TYPE.— M. C. Z. 4,590. PARATYPES.— M. C. Z. 4,591. Fijis: Lasema (W. M. Mann).

Distinguishable easily from the two preceding species, which it resembles in the marked concavity or elevation of the venter above the edges of the tergites, in the form of the head. The latter is shorter in proportion to the depth at the upper end and about equals the length of the first tergite. Whereas in *S. frater* the head in profile is straight, or even slightly concave, from near the level of the eyes ventrad and in *senior* is likewise straight or very nearly so, in the present species the line bulges decidedly convexly a little below the level of the antennae. The hairs on the face proportionately longer and more evenly distributed. The coloration is much as in *S. frater*, being light ferruginous with lighter, more yellow markings but without the violaceous mottlings of many species. Hairs of dorsum short, numerous.

Number of segments (female type), seventy-three.

Length, near 11 mm. More slender than *frater*.

256. SIPHONOTUS SOLOMONENSIS, sp. nov.

TYPE.— M. C. Z. 4,960. PARATYPE.— M. C. Z. 4,961. Solomons: Fulakora (W. M. Mann).

General color pale fulvous of a slight greenish tinge with anterior borders of segments darker, a weakly outlined pale spot in dark region on each side below. Antennae dusky over a light background, darker distally.

Head subtriangular in outline, the line of face in profile not indented at level of antennae, weakly convex to lower end; sides nearly straight but slightly incurved a little above tip and above that weakly convex. Eyes more than twice their diameter apart. Antennae unusually stout and heavy, strongly clavately widened to fifth article, the sixth moderately narrowing distad, the seventh very small; exceeding head below by sixth and seventh articles or by these and part of fifth article. Head and antennae subdensely clothed with hairs of moderate length.

Collum of usual general form; more than twice as wide as head; in length about equal to the two succeeding somites.

Tergites extending on each side below level of pleurites, with dorsum strongly arched. Caudal margin of tergites below on each side essentially straight, the caudoventral corner rectangular, slightly narrowly rounded. Caudal edge of pleurite beginning ectally in front of caudal corner of tergite and running caudad of mesad, straight, inner caudal corner a little rounded, mesal margin straight, a little oblique.

Somites not constricted, the prozonites depressed only a little anteriorly. Body proportionately broad and heavy. Hairs moderate in length, not stout, uniform.

Number of segments (female type), fifty-nine.

Length, to near 15 mm.; width, near 1.2 mm.

257. SIPHONOTUS SOCIUS, sp. nov.

TYPE.— M. C. Z. 4,962. PARATYPE.— M. C. Z. 4,963. Solomons: Fulakora (W. M. Mann).

General color fulvous of a weak ferruginous cast. Antennae dark, purplish black, especially distally.

Head similar to that of preceding species but in side view more pointed below with curve of face weakly indented at beginning of frontal region below which more strongly convex than in the other species, in upper clypeal region somewhat incurving and then convex above lower end. Differing from that species obviously in the antennae which are smaller, being both shorter and more slender and much more nearly cylindrical with the sixth article more strongly narrowed distad and all articles shorter.

Collum differs in having lower posterior angle more acute, the lateral margin in front of it weakly widely concave.

The transverse suture of segments in general more sharply and deeply impressed. Body as a whole somewhat slender and more strongly narrowed cephalad.

Number of segments from near fifty-six to eighty-two.

Length, to 13 or 14 mm.

This form is very close to the preceding species from which it is separated with some hesitation, though when the two are placed together it may be distinguished by differences in color, robustness, and especially in form of antennae and face. Unfortunately no males are available for comparison.

258. SIPHONOTUS ATTANUS, sp. nov.

TYPE.— M. C. Z. 4,967 (male). PARATYPES.— M. C. Z. 4,968 (males and females). Solomons: Atta (W. M. Mann).

The general color is pale fulvous. Antennae proximally fulvous, the distal articles violaceous, particularly over distal borders.

The profile of the head furnishes an easy means of distinction between the two species, this in the present one being evenly widely concave between level of gentle upper frontal convexity and lower end of head, sometimes angularly indented near middle of this line. Antennae proportionately more slender with articles relatively longer, the sixth article proportionately longer and only slightly narrowed distad; antennae typically not widening beyond middle from where either subcylindrical or a little narrowing distad.

Collum widely depressed across middle; lower margin concave toward caudal end where it curves down making caudolateral angle of plate acute.

Number of segments (male and female) fifty to fifty-two.

Length, near 13 mm.

May be recognized among other species of the Solomons by the form of the head. This somewhat resembles that of *S. socius* but is longer and proportionately more slender, the sides of face less strongly converging ventrad.

A notably more slender species than *S. socius.* Segmental sutures distinct but prozonites not sharply depressed, continuing evenly the dorsal line of metazonite, this line decreasing gradually beneath preceding plate.

259. SIPHONOTUS CURTICEPS, sp. nov.

TYPE.— M. C. Z. 4,964. PARATYPES.— M. C. Z. 4,965, 4,969. Solomons: Fulakora, Atta (W. M. Mann).

A smaller, more slender species than the two preceding. Of a somewhat fulvous grey color with antennae dark as usual.

Strongly characterized by the form and proportions of the head. This is extremely short, with lower part of face much less acute than usual; the width of face at lower level of antennal sockets greater than the length below this level; ·in front view side of face typically more or less angled between antennae and lower end; in profile face is prominently convex at junction of vertigial and frontal regions below which it is straight. Antennae clavate, thick, joint short, much exceeding head because of shortness of latter.

Number of segments in both type and paratype, fifty-four.

Length, 11.5 mm.

260. Siphonotus flavomarginatus Attems.

Fauna südw. Austr., 1911, **3**, p. 201, fig. 99–110.[1]

Locality.— W. Australia: Torbay.[1]

261. Siphonotus brevicornis Pocock.

Ann. mag. nat. hist., 1903, ser. 7, **12**, p. 531.[1]

Locality.— Victoria: Gippsland, Narre Warren.[1]

262. Siphonotus bivittatus (Pocock).

Bdellotus bivittatus Pocock, Willey's Zool. results, 1898, pt. 1, p. 73.[1]

Locality.— Loyalty Islands: Lifu.[1]

263. Siphonotus setosus Silvestri.

Term. füz., 1899, **22**, p. 205.[1]

Locality.— New Guinea: Tamara Island.[1]

264. Rhinotus michaelseni (Attems).

Orsilochus michaelseni Attems, Fauna südw. Austr., 1911, **3**, p. 199, fig. 93–98.[1]

Locality.— W. Australia: Bridgetown, Yallingup.[1]

265. Rhinotus celebensis Carl.

Rev. Suisse zool., 1912, **20**, p. 126, pl. 5, fig. 22, pl. 6, fig. 23, 24.[1]

Locality.— Celebes: Masarang.[1]

266. Rhinotus trichocephala Carl.

Rev. Suisse zool., 1912, **20**, p. 128.[1]

Locality.— Celebes: Manipi.[1]

SIPHONETHUS, gen. nov.

Distinguished from Siphonotus by having two ocelli on each side instead of one, and by having the head excavated on each side above for the reception of the antennae.

GENOTYPE.— *S. enotatus*, sp. nov.

267. SIPHONETHUS ENOTATUS, sp. nov.

TYPE.— M. C. Z. 4,885. New Zealand: Taumarunni (W. M. Wheeler).

Color uniform fulvoferruginous, or rather more ferruginous at anterior end, with collum, head and antennae somewhat dusky.

Face below level of eyes broadly triangular, sides nearly straight, inferior end acute. Ocelli on mesodorsal side of antennal socket, two in number on each side of which the upper one is the smaller. Head rather deeply excavated on each side for insertion or reception of antennae. Antennae cylindrical, enlarging distad, the lower end of face reaching to near middle of fourth article. Face transversely depressed or furrowed at lower level of antennal notches.

Collum three times as wide as the head. Body hemicylindrical. Each segment transversely furrowed or constricted. Hairs of body moderately long, sparsely and nearly uniformly distributed.

Number of segments, forty-nine.

Width, .93 mm.

268. SIPHONETHUS BELLUS, sp. nov.

TYPE.— M. C. Z. 4,878. New Zealand: Day's Bay, near Wellington (W. M. Wheeler).

Distinguished readily by its color-pattern. The general color yellow with a median dorsal longitudinal black line and a broader but still narrow submarginal black stripe on each side, a small yellow dot enclosed in the black of the latter on each segment. Collum, face, and antennae dusky. Legs fulvous. Antennae stout, moderately clavate; reaching to caudal edge of second tergite. Face below antennae triangular, the sides convex, the lower end acutely rounded. Each segment constricted across middle, the furrow with longitudinal striae. Body of type nearly glabrous, the hairs few.

Number of segments, thirty-six.

Width, .92 mm.

SIPHONOPHORIDAE.

269. SIPHONOPHORA ATOPA, sp. nov.

TYPE.— M. C. Z. 4,579. PARATYPES.— M. C. Z. 4,580, Fijis: Nadarivatu (W. M. Mann).

General color above somewhat dusky brown, the head and first segment or two more ferruginous; a series of black dots along each side; antennae dusky over a brownish or fulvous ground.

Rostrum long and curved, more than twice as long as the head. Antennae clavate to middle, then of nearly uniform width to distal end; sixth article cylindrical, the seventh much reduced and often invisible in side view; only slightly exceeding the rostrum.

First tergite with anterior margin conspicuously incurved at middle; a little longer than the two succeeding tergites together; lower anterior margin or corner on each side widely rounded; caudal lower corner subrectangular; lower margin slightly convex, on a level with the others.

Dorsum very densely clothed with short straight hairs, those of the last tergite and those of the head longer than the others. Pleurites with caudal margin convex; inner margin distinctly emarginate near middle.

Legs of first six somites stouter than the others, decreasing gradually from the first pair through this series, the claws of these legs also stouter.

Posterior gonopods with distal article long and slender, distally with funnel-shaped expansion but not at all uncate, the funnel symmetrical; a spine at base as usual, this short. Distal article of anterior gonopods elongate; ectal basal spine long, acute, appressed to the principal lobe.

Number of somites, sixty-five to seventy-five.

Length, up to 20 mm.

270. SIPHONOPHORA ZELANDICA, sp. nov.

TYPE.— M. C. Z. 4,577. New Zealand: Day's Bay, near Wellington, August 17, 1914 (W. M. Wheeler).

Fulvoferruginous above; a series of small yellow spots along each side; a darker stripe across each tergite and a darker middorsal longitudinal line.

Hairs throughout very short, uniform. Rostrum short and slender, much shorter than the head; slightly curved. Antennae missing.

First dorsal plate equal to the two succeeding ones together; lower margin rounded, extending below the level of the others. Pleurites with caudal margin convex, the ectal straight; inner margin only very obscurely incurved or indented near middle.

Number of segments, fifty-four.

271. SIPHONOPHORA NANSORIANA, sp. nov.

TYPE.— M. C. Z. 4,578. PARATYPES.— M. C. Z. 4,581. Fijis: Nansori, Lasema (W. M. Mann).

Dark fulvous, uniform.

Rostrum equal in length to the head, very slightly curved. Antennae strongly clavate; surpassing the rostrum, the latter not fully attaining the middle of the penult article, and thus shorter relatively than in *S. flaviceps*, the Javan species.

First tergite with lower margin straight, on a level with the others; equal in length to the two succeeding tergites taken together. Tergites densely clothed with fine hairs which are short but obviously longer than in *S. zelandica*.

Pleurites with caudal margin straight as is also the ectal, the latter finely serrate; mesal corners rounded, the mesal side weakly emarginate at middle.

Number of segments in type, fifty-eight; in paratypes, forty-three to fifty-five.

Length, 12 mm.

272. SIPHONOPHORA DUX, sp. nov.

TYPE.— M. C. Z. 4,970 (female). Solomons: Bulimatarava (W. M. Mann).

Body in general of light ferruginous cast, rostrum paler and antennae bright yellow.

Rostrum much exceeding the head proper in length and also a little exceeding the antennae. Antennae widening a little to near middle, then nearly of uniform width; sixth article cylindrical, slightly narrowing at distal end, equalling the preceding two and a half articles or more.

Collum longer than the two succeeding somites together; anterior margin nearly straight; anterolateral corners obliquely cut off, the oblique edge a little convex, more angled at each end; lower margin straight.

Body very slender. Dorsum very densely clothed with short hairs which are longer on head and on last segments. Posterior margin of pleurites evenly convex; mesal margin angularly emarginate at middle, the lobe on each side evenly convex.

Number of segments (female), seventy-eight.

Length, 19.5 mm.

273. SIPHONOPHORA OBSCURIOR, sp. nov.

TYPE.— M. C. Z. 4,971. PARATYPES.— M. C. Z. 4,972, 4,974, 4,978. Solomons: Fulakora, Pamua, Wainoni Bay, Auki (W. M. Mann).

General color from light ferruginous to dark ferruginous and deep brown. Sometimes a series of obscure blackish dots along each side of dorsum or these more or less fused. Antennae fulvous.

Head deep, stout. Rostrum exceeding the head in length, extending a little beyond distal end of sixth antennal article. Antennae long, of usual form, sixth article narrowing moderately distad, the seventh small and forming a rounded apex to the sixth.

Collum with anterior margin at middle forming a very obtuse reentrant angle; lower margin convex, often extending a little below level of lower edges of succeeding ones; anterolateral corner widely convex; about equalling the two succeeding somites together in length.

Dorsum densely clothed with hairs as usual, those of body of uniform length but those on front of head longer.

Posterior margin of pleurites evenly convex; mesal margin incurved, the caudal lobe larger than the anterior, the edge of the latter nearly straight, that of the other rounded.

Number of segments, forty-five to fifty-five.

Length, 11 mm.

274. SIPHONOPHORA MEDIA, sp. nov.

TYPE.— M. C. Z. 4,977. Solomons: Wainoni Bay (W. M. Mann).

Fulvous of light ferruginous cast. Antennae yellow.

Aside from coloration and being a smaller and much more slender form, the present species differs in various other characters from *S. obscurior.* The head is somewhat more slender, less abruptly narrowed in front. The rostrum long and curved, much exceeding the head and extending to near distal end of sixth antennal article. Antennae more slender; the sixth article less narrowed distad, nearly strictly cylindrical.

Anteroventral corner of collum less oblique but well rounded. Collum a little longer than the two succeeding tergites together.

Differing in structure of male gonopods, *e. g.* the distal division of the anterior pair notably longer, extending forward to near the anterior border of the sixth somite, with the transparent, blade-like distal end more abruptly bent ventrad, subgeniculate instead of evenly curved.

Number of somites, seventy-five.

Length, about 7.5 mm.

275. SIPHONOPHORA VITTATA Pocock.

Weber's Reise, 1894, **3**, p. 337.[1]

LOCALITY.— Flores.[1]

276. SIPHONOPHORA LORIAE Silvestri.

Ann. Mus. civ. Genova, 1894, **34**, p. 636.[1]

LOCALITY.— New Guinea: Moroka.[1]

277. SIPHONOPHORA VINOSA Silvestri.

Ann. Mus. civ. Genova, 1894, **34**, p. 636.[1]

LOCALITY.— New Guinea: Moroka.[1]

278. SIPHONOPHORA LONGIROSTRIS Silvestri.

Ann. Mus. civ. Genova, 1894, **34**, p. 637.[1]

LOCALITY.— New Guinea: Moroka.[1]

279. SIPHONOPHORA SCOLOPACINA Silvestri.

Ann. Mus. civ. Genova, 1894, **34**, p. 637.[1]

LOCALITY.— New Guinea: Moroka.[1]

STEMMIULOIDEA.

STEMMIULIDAE.

280. DIOPSIULUS PARVULUS Silvestri.

Term. füz., 1899, **22**, p. 210, pl. 13, fig. 37–40.[1]

LOCALITY.— New Guinea: Erima, Astrolabe Bay.[1]

HETEROCHORDEUMIDAE.

281. SCHEDOTRIGONA HISTRIX Silvestri.

Boll. Mus. Torino, 1903, **18**, p. 12.[1]

LOCALITY.— New Zealand.[1]

282. SCHEDOTRIGONA SMITHI Silvestri.

Boll. Mus. Torino, 1903, **18**, p. 13.[1]

LOCALITY.— New Zealand.[1]

283. HUTTONIELLA TRISETOSA (Hutton).

Craspedosoma trisetosum Hutton, Ann. mag. nat. hist., 1877, ser. 4, **20**, p. 116.[1]
Huttoniella trisetosa Pocock, Ann. mag. nat. hist., 1903, ser. 7, **12**, p. 519, f. a-h.[2]

LOCALITY.— New Zealand:[1,2] Maungatua.[2]

POLYDESMOIDEA.

POLYDESMIDAE.

284a. AUSTRALIOSOMA TRANSVERSETAENIATUM (L. Koch).

Strongylosoma transverse-taeniatum L. Koch, Verh. Zool. bot. gesellsch. Wien, 1867, **17**, p. 246.[1]

LOCALITY.— Queensland: Brisbane.[1]

285. AUSTRALIOSOMA BIFALCATUM (Silvestri).

Eustrongylosoma bifalcatum Silvestri, Bull. Soc. ent. Ital., 1897, **29**, p. 231, fig. 13, 14.[1]

LOCALITY.— Queensland: Cairns.[1]

286. AUSTRALIOSOMA FROGGATTI Brölemann.

Records Austr. mus., 1913, **10**, p. 95, pl. 14, fig. 8–12.[1]

LOCALITY.— New South Wales: Shoalhaven Distr., Mt. Sassafras.[1]

287. AUSTRALIOSOMA RAINBOWI Brölemann.

Records Austr. mus., 1913, **10**, p. 97, fig. 26, pl. 14, fig. 13–17.[1]

LOCALITY.— New South Wales: Mt. Sassafras.[1]

288. AUSTRALIOSOMA KOSCIUSKOVAGUM Brölemann.

Records Austr. mus., 1913, **10**, p. 100, fig. 27, pl. 15, fig. 18–20.[1]

LOCALITY.— New South Wales: Pretty Point, near Mt. Kosciusko.[1]

289. AUSTRALIOSOMA (DICLADOSOMA) ETHEREDGEI Brölemann.

Records Austr. mus., 1913, **10**, p. 103, pl. 15, fig. 21, 22.[1]

LOCALITY.— New South Wales: Pretty Point, near Mt. Kosciusko.[1]

290. AUSTRALIOSOMA (CLADETHOSOMA, subgen. nov.) CLARUM, sp. nov.

TYPE.— M. C. Z. 4,887. PARATYPES.— M. C. Z. 4,888. New South Wales: Hornsby (W. M. Wheeler).

Of the known species apparently nearest *A. rainbowi* Brölemann but easily distinguished by the structure of the gonopods in which the seminal branch is deeply subdivided, the gonopod thus presenting four branches (Cladethosoma, subgen. nov.) instead of three (Australiosoma *sens. str.*) or two (subgen. Dicladosoma). The tibial branch is much broader; at the tip it is curved back uncately and on the mesal edge just proximad of the curved part presents an acute tooth. The seminal branch proper curves in mesad beneath and in contact with the apical portion of the tibial division, and is broadly expanded near the middle of its length; the branch from near its base and on the mesal side is more slender and straight, but little curved at the acute tip. The tarsal branch at its base is ectad of the seminiferous branch in between which and the tibial plate it curves and is there partly concealed. The coxa bears a long, cylindrical, peg-like process on the mesal edge of its distal end.

The general color is chestnut-black with a broad longitudinal median dorsal yellow band bisected by a narrow dark stripe or line and with the keels also yellow, the gemination of the dorsal stripe not always evident in young specimens. Legs and antennae brown to somewhat chestnut. Anal valves blackish.

Keels of second segment each with a single lateral tooth near anterior corner.

Anal scutum much exceeding the valves; the cauda flattened, distal margin incurved or notched.

Length (male), near 35 mm.; width, 4 mm.

291. ATROPISOMA HORVATHII Silvestri.

Term. füz., 1899, **22**, p. 207, pl. 10, fig. 9–12.[1]

LOCALITY.— New Guinea: Erima, Astrolabe Bay.[1]

292. ATROPISOMA INSULARE Silvestri.

Term. füz., 1899, **22**, p. 207, pl. 10, fig. 13, 14.[1]

LOCALITY.— New Guinea: Tamara Island.[1]

293. ATROPISOMA ELEGANS Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 12.[1]

LOCALITY.— Queensland: Gayndah.[1]

The validity and position of Atropisoma, of which the present species is the type, can only be determined when the characters of the male are known.

294. EUSTRONGYLOSOMA FASCIATUM (Silvestri).

Strongylosoma fasciatum Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 642.[1]

LOCALITY.— New Guinea: Hughibagu, Moroka.[1]

The genotype of Eustrongylosoma.

295. EUSTRONGYLOSOMA INSULARE Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 11, pl. 2, fig. 63, 64.[1]

LOCALITY.— Caroline Islands: Ponape.[1]

296. EUSTRONGYLOSOMA TRANSVERSEFASCIATUM Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 12, fig. 15, 16.[1]

LOCALITY.— Queensland: Gayndah.[1]

AUSTRALODESMUS, gen. nov.

Close to Australiosoma, differing only in the male gonopods which present a very different appearance. In the gonopods the telopodite is similarly split at the distal end, but the branches are much shorter, arising well distad of the middle of the length instead of toward the base; the ventral (posterior) branch expanded, spatulate, the seminiferous branch slender, styliform, arising from the dorsal face of the ventral branch much higher up than the origin of the dorsal or anterior branch which is straight and acute, resembling that in certain species of Antichiropus.

GENOTYPE.— *A. divergens*, sp. nov.

297. AUSTRALODESMUS DIVERGENS, sp. nov.

TYPE.— M. C. Z. 4,625. Queensland: Kuranda (W. M. Wheeler).

The general color is dark chocolate-brown, without distinct markings; the pleural region darker than the dorsal. Legs testaceous, the antennae browner.

Clypeal region pilose. Head smooth, not uneven. Vertigial sulcus short. Antennae long and slender, joints in the male in length measuring as follows: — second, third and fourth, .6 mm., fifth, .48 mm., sixth, .4 mm., seventh, .2 mm.

Surface of tergites smooth and shining. Each segment with transverse sulcus deep; a much weaker median longitudinal sulcus. Keels of second segment well below level of adjacent ones, narrow, somewhat concave above. Other keels anteriorly strongly rounded, scarcely raised, the produced caudal corner acute. Caudal of anal tergite extending widely beyond the valves, nearly straight, narrowly truncate.

The legs in general exceptionally long and slender, the last article increasing markedly in length caudally. In the male the last joint and the distal half of penult joint of legs of anterior region densely pilose, the branches thinning out and disappearing caudad, first from the penult and then from the ultimate article. First legs of the male shorter; third joint with a short conical tooth at proximal end.

The median vertical plate from anterior edge of the fifth sternite strongly narrowed distad, distally subtruncate.

The telopodite of male gonopods long, flattened; strongly narrowed just beyond junction with coxa; near the beginning of the distal third of total length a ventral branch of flattened, strongly clavate form arises, the main blade continuing straight forward but narrowing to an acute point; the ventral process is concave dorsally and near the middle of its length gives rise above to the seminiferous branch which is styliform; the style extends first obliquely cephalodorsad, then runs straight forward or distad to meet the edge of the expanded ventral branch proper at which it curves dorsad to end in a short acute point.

Precise length not ascertainable; width, 2 mm.

ZELANODESMUS, gen. nov.

Close to the preceding genus, Australiosoma, and Orthomorpha but differing in the character of the male gonopods. Each gonopod in the type has the telopodite in the form of a broad blade which gives off on the mesal side near the middle of its length a prong stout at base but long and slenderly acuminate; beyond this the process bifurcates into a flattened seminiferous longer middle branch and a much more slender, styliform, acutely pointed and moderately curved dorsal branch, all the branches remaining well apart from each other.

GENOTYPE.— *Z. rotornanus*, sp. nov.

298. ZELANODESMUS ROTORNANUS, sp. nov.

TYPE.— M. C. Z. 4,627. New Zealand: Rotorna (W. M. Wheeler).

Color above chocolate-brown, darker caudad of the suture and on each side just above the narrow yellow keels. Last tergite flavous excepting proximally. Legs fulvous. Antennae brown.

Vertigial sulcus reaching down to or very nearly to upper level of antennal sockets. Clypeal region with scattered coarse puncta or foveolae which are setigerous. Antennae reaching upon the third somite; second, third, and fourth articles measuring each close to .44 mm., the sixth, .52 mm.

Dorsum well arched, not at all tuberculate, shining, at most finely and not densely coriarious. First four tergites without sulci; the others with a deep transverse sulcus excepting the penult and ultimate; keels distinct but very narrow, narrower anteriorly where well rounded; posterior angles subrectangular, not at all, as in the posterior region, produced caudad of posterior margin of the tergite; keels of seventeenth, eighteenth, and nineteenth segments anteriorly scarcely evident, and those of the nineteenth as a whole almost obliterated. None of keels with trace of serration. Last tergite broad, somewhat scoop-shaped, strongly narrowed caudad, the caudal margin weakly incurved or emarginate.

Anal sternite caudally strongly convexly rounded, bulging caudad between the setigerous articles.

First legs in male thickened; third joint with a small tooth on the ventral surface near middle, not otherwise specially modified. First several pairs of legs with last joint bearing a dense series of stiff short hairs beneath. Plate of fifth sternite subquadrate, angles slightly rounded.

Gonopods of male very short, scarcely reaching the bases of the anterior legs of the preceding somite.

Length, near 18 mm.; width, 1.8 mm.

299. ZELANODESMUS AUSTRALIANUS sp. nov.

TYPE.— M. C. Z. 4,892. New South Wales: Southerland (W. M. Wheeler).

Gonopods very similar to those of *Z. rotornanus;* the mesal spur of telopodite more transverse in position, making a more obtuse angle with the distal part, and also proportionately longer and more slender; distal branches also bending into a more nearly transverse position.

The color-pattern is characteristic; each metazonite caudad of the transverse furrow is black while in front of this it is black at the sides but fulvous or greyish at the middle but with a triangular median black spot projecting into it from the caudal region; the prozonites are light with a black area each side of dorsum, and below on each side and often a small middorsal dark dot. Legs fulvous.

It is larger than *Z. rotornanus*, the width being 2 mm.

300. ANTICHIROPUS VARIABILIS Attems.

Antichiropus variabilis ingens Attems, Fauna südw. Austr., 1911, **3**, p. 171, fig. 27, 28.[1]

LOCALITIES.— W. Australia: Wooroloo, Lion Mill, Mundaring Weir, Guildford, East Fremantle, Cannington, Harvey, Collie, Brancaster, Bridgetown, Donnybrook, Boyanup, Gooseberry Hill, Pickering Brook, York.[1]

Attems divides the species *variabilis* into two subspecies to each of which he gives a name distinct from the specific name. The first of these subspecific names, *ingens,* is here suppressed as a synonym of *variabilis sens. str.*

300a. ANTICHIROPUS VARIABILIS NANUS Attems.

Fauna südw. Austr., 1911, **3**, p. 172, fig. 29, 30.[1]

LOCALITIES.— W. Australia: Boyanup, Yallingup.[1]

301. ANTICHIROPUS MINIMUS Attems.

Fauna südw. Austr., 1911, **3**, p. 173, fig. 31.[1]

LOCALITIES.— W. Australia: Mundaring Weir, Jarrahdale.[1]

302. ANTICHIROPUS WHISTLERI Attems.

Fauna südw. Austr., 1911, **3**, p. 174, fig. 32, 33.[1]

LOCALITIES.— W. Australia: Buckland Hill near North Fremantle, Rottnest, Brancaster in the upper Blackwood district.[1]

303. ANTICHIROPUS MONACANTHUS Attems.

Fauna südw. Austr., 1911, **3**, p. 176, fig. 34–36.[1]

LOCALITIES.— W. Australia: Dirk Hartog, Brown Sta., Tamala in Edel Land, Wooroloo.[1]

304. ANTICHIROPUS FOSSULIFRONS Attems.

Fauna südw. Austr., 1911, **3**, p. 176, fig. 37, 38.[1]

LOCALITIES.— W. Australia: Yalgoo, Eradu.[1]

305. ANTICHIROPUS SULCATUS Attems.

Fauna südw. Austr., 1911, **3**, p. 177, fig. 39–41.[1]

LOCALITY.— W. Australia: Guildford.[1]

NOTODESMUS, gen. nov.

Differing from Antichiropus and closely related genera in the character of the male gonopods. Readily distinguished from the same in wholly lacking spines or processes at the end of the long tibial or proximal division of the telopodite; the distal division of the telopodite consisting of a straight proximal subdivision at the dorsodistal edge of which there is (at least in the genotype) a thin short spine, and a strongly curled, thin distal blade which in the genotype crosses or interlocks with that of the other gonopod. The first legs as in related genera stout, with the third joint provided with a tooth at proximal end on ventral surface but not so strongly modified as in Antichiropus. Fifth sternite with anterior edge bearing the usual plate-like elevation but this low and thick in the genotype. Antennae of moderate length, distally clavate; second, third, and fourth articles subequal and but little longer than the fifth and sixth. Keels but slightly raised above level of pleural surface, set off from above by a deep sulcus in the genotype; second keels below level of adjacent ones; keels from fifth caudad much thicker or more swollen than the anterior ones.

GENOTYPE.— *N. scotius*, sp. nov.

306. NOTODESMUS SCOTIUS, sp. nov.

TYPE.— M. C. Z. 4,646. PARATYPES.— M. C. Z. 4,647. Tasmania: Wedge Bay, February, 1915 (G. H. Hardy).

Dorsum deep chocolate to black, lower pleural and the ventral regions paler, ferruginous to testaceous. Antennae like dorsum, legs blackish or dark brown, proximally paler.

Vertigial sulcus deep, extending ventrad to a little above the level of the antennal sockets, the sulcus at bottom of a wider furrow or depression. Face with numerous long straight setae, these above level of antennae fewer, along sides of median sulcus.

First tergite with each lateral end rounded, the anterior corner more widely so than the posterior; above each lateral margin with a deep longitudinal furrow, margined below and a little ways up anterior side. Other tergites smooth and shining, the prozonites very finely coriarious, the metazonites smooth excepting in some certain obscure longitudinal rugae toward each side and more particularly caudad of the transverse sulcus. Metazonites from the fourth to the eighteenth inclusive with a deep transverse sulcus which ends on each side well above the level of the keels. Longitudinal sulci limiting keels above deep and sharply defined.

Anal scutum narrowed caudad in the usual manner, the cauda rather wide and flattened dorsoventrally, not at all subcylindrical, the caudal margin truncate or mesally slightly notched. Dorsal surface, especially caudad of middle, obscurely transversely rugose; with two transverse series of setae additional to those projecting from caudal end, one near middle and one a little in front of caudal border. Anal valves sharply defined mesally. Anal scale caudally convexly rounded, convexly elevated between the two setigerous tubercles.

Length (female), to near 16 mm.; width, 2.5 mm. The males more slender, the width of a specimen 15 mm. long being near 1.8 mm.

307. AKAMPTOGONUS BEAUFORTI Attems.

Bijdr. dierk., 1915, **20**, p. 5.[1]

LOCALITY.— Waigeu: Bajon.[1]

308. ORTHOMORPHA LAMPRA, sp. nov.

TYPE.— M. C. Z. 4,628. Fiji: Levuka (W. M. Mann).

Metazonites above deep chocolate, the keels not paler, prozonites and sides lighter; the venter and legs fulvous; antennae distally dark brown, paler proximally.

Dorsal surface not tuberculate or granular, shining, under lens appearing finely and not strongly coriarious.

Vertigial sulcus of head deep, reaching nearly to level of upper margin of antennal sockets. Frontal and clypeal regions with numerous long stiff setae. Face in profile angularly bent forward at lower level of antennal sockets.

This species stands apart with *O. bisulcata* Pocock from Burma in having the tergites mostly crossed by sharply impressed median longitudinal sulci in addition to the transverse sulci; but in the present species this longitudinal sulcus is distinct even on the first tergite and all others to and including the nineteenth whereas it exists only on segments from the third to the eighteenth in *bisulcata*. The keels are very narrow but thick dorsoventrally, with pores toward lower margin of edge; posterior angles not produced in any. Last tergite of usual form, notched caudally; crossed with a basal, submedian, and subapical transverse series of setae.

Other segments with a series of setae across anterior border of metatergite.

In the male gonopods both the coxae and telopodites very long. The latter clavately widened distad from a narrow base; each on the mesal side distad of middle with a branch in the form of a broad thin plate with distal end concavely excavated and dorsoventral face concave. The principal branch is also thin and flattened and is geniculate, bending abruptly mesad near its middle, its ventral surface concave. Opposite the mesal branch the seminiferous branch arises, this bending obliquely across the main branch and extending distomesad in contact with the mesal and ventral surface of the latter; just above the origin of the seminiferous branch a curved, slender and acute spur.

Length, near 20 mm.; width, 1.8 mm.

309. ORTHOMORPHA COARCTATA (Saussure).

Polydesmus coarctatus Saussure, Mém. Mex. Myr., 1860, p. 39, fig. 18.
Strongylosoma coarctatum Pocock, Weber's Reise, 1894, **3**, p. 366.[1]

Orthomorpha coarctata Pocock, Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 327.[2] Attems, Syst. Polydes., 1897, pt. 1, p. 335, pl. 4, fig. 85.[3] Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 270.[4] Attems, Bijdr. dierk., 1915, **20**, p. 6.[5]

Localities.— Celebes: Makassar.[1] Saleyer.[1] Flores: Bari, Reo.[1] Ternate. Halmaheira. Gani.[3] Saonek.[5] Kei Islands: Great Kei, Elat, Little Kei, Tual. Aru Islands: Terangan, Ngaiboor,[4] Barkai, Gomo Gomo, Longar.[4] Ellice Islands: Rotuma.[2, 5] Hervey Islands: Rarotonga (W. M. Wheeler). Fijis: Suva (A. G. Mayer), Wainunu, Nasoqo, Nansori, Somo Somo, Munia, Labasa, Levuka, Waiyanitu, Lasema (W. M. Mann). Society Islands: Tahiti. Samoa: Apia (V. L. Kellogg). Hawaiian Islands: Oahu: Honolulu (Albatross 1902).

310. ORTHOMORPHA WEBERI (Pocock).

Strongylosoma weberi Pocock, Weber's Reise, 1894, **3**, p. 367, pl. 21, fig. 4, 4a.[1]

Locality.— Celebes: Makassar.[1]

311. ORTHOMORPHA ASPERA (L. Koch).

Strongylosoma aspera L. Koch, Verh. Zool. bot. gesellsch. Wien, 1867, **17**, p. 245.[1]

Locality.— Queensland: Brisbane.[1]

312. ORTHOMORPHA DUBIA (L. Koch).

Strongylosoma dubium L. Koch, Verh. Zool. bot. gesellsch. Wien, 1867, **17**, p. 247.[1]

Locality.— Queensland: Brisbane.[1]

313. ORTHOMORPHA GRACILIS (C. Koch).

Fontaria gracilis C. Koch, Syst. Myr., 1847, p. 142.
Paradesmus gracilis Daday, Term. füz., 1891, **14**, p. 179.[1] Latzel, Bull. Soc. zool. France, 1892, **17**, p. 186.[2]
Strongylosoma gracile Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 130.[3]
Orthomorpha gracilis Attems, Syst. Polydes., 1897, pt. 1, p. 337, pl. 4, fig. 89, 90.[4]

Localities — New Zealand: Rotorna (W. M. Wheeler). Hervey Islands: Rarotonga (W. M. Wheeler). Fijis: Viti.[4] Society Islands: Tahiti[2] (Albatross 1899; W. M. Wheeler, 1914). Samoa.[1] Hawaiian Islands: Hawaii: Hilo; Oahu: Honolulu.[3]

314. Orthomorpha vinosa (Pocock).

Strongylosoma vinosa Pocock, Weber's Reise, 1894, **3**, p. 361, pl. 22, fig. 3.[1]

Locality.— Flores: Bari.[1]

315. Orthomorpha impressa (Le Guillou).

Polydesmus impressum LeGuillou, Bull. Soc. philom. Paris, 1841, p. 85.[1] Gervais Insect. Apt., 1847, **4**, p. 103.[1]

Locality.— New Guinea.[1]

316. Orthomorpha loriae (Silvestri).

Strongylosoma loriae Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 645.[1]

Locality.— New Guinea: Hughibagu, Moroka.[1]

317. Orthomorpha gervaisi (Lucas).

Polydesmus gervaisi Lucas, Anim. artic. Crust. etc., 1840, p. 525; Gervais, Insect. Apt., 1847, **4**, p. 118.
Strongylosoma trilineata Newport, Ann. mag. nat. hist., 1844, **13**, p. 266.
Strongylosoma petersii L. Koch, Verh. Zool. bot. gesellsch. Wien, 1865, **15**, p. 882.[1]
Strongylosoma gervaisii Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 131.[2]

Localities.— New South Wales: Sydney, Paramatta;[2] Queensland: Cape York, Wollongong.[1]

318. Tricladosoma novarrae (Humbert and Saussure).

Polydesmus (*Strongylosoma*) *novarrae* Humbert & Saussure, Verh. Zool. bot. gesellsch. Wien, 1869, **19**, p. 689.[1]
Strongylosoma novarrae Attems, Syst. Polydes., 1897, pt. 1, p. 305, pl. 3, fig. 58.

Locality.— New Zealand: Auckland.[1]

319. TRICLADOSOMA TRIAINA (Attems).

Orthomorpha triaina Attems, Fauna südw. Austr., 1911, **3**, p. 178, fig. 42.[1]

LOCALITY.— W. Australia: Albany.[1]

320. SERANGODES STRONGYLOSOMOIDES Attems.

Denks. Akad. Wien, math.-nat. kl., 1899, **67**, p. 273.[1]

LOCALITY.— New Zealand.[1]

321. CYLINDRODESMUS VILLOSUS Pocock.

Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 329.[1]

LOCALITY.— Ellice Islands: Rotuma.[1]

322. CYLINDRODESMUS STRUBELLI (Verhoeff).

Haplosoma strubelli Verhoeff, Zool. anz., 1894, **17**, p. 8.[1]

LOCALITY.— Amboina.[1]

323. STRONGYLOSOMA NIGRUM, sp. nov.

TYPE.— M. C. Z. 4,659. New South Wales: Southerland (W. M. Wheeler).

Color above shining black, the sides duller; keels with lateral edges in whole or in part tending toward dark ferruginous. Venter ferruginous brown. Legs and antennae black or nearly so.

Sulcus of vertex deep, extending down to level of the antennal sockets. On each side above antennae somewhat roughened by weak subvertical rugae. Antennae very slender, scarcely clavate distad; length of second, third, fourth, fifth, and sixth joints respectively .52 mm., .48 mm., .44 mm., .4 mm., and .44 mm.

First tergite obviously narrower than the second. Lateral ends well rounded. Strongly margined laterally and for a short distance up the front. A short longitudinal sulcus a little way above the lateral margining sulcus. Sulci between prozonites and metazonites strongly beaded. Second keel below level of adjacent ones, distinct and sharply limited; anterior angle rounded, the posterior one a little produced caudad. Tergites from fifth to eighteenth inclusive with a deep transverse sulcus which on most extends nearly to the keel on each side. Surface more or less punctate and moderately coriariously roughened, more especially behind the sulci. Posterior angles of keels in posterior region extended caudad distinctly beyond caudal margin of tergites. In lateral view the keels narrowing or decreasing in thickness triangularly caudad, but the posterior angle narrowly rounded, much less acute than in *S. robustior* than which it is a very much smaller species.

The cauda of the anal scutum flat, concave beneath, extending a smaller distance than usual beyond the valves.

Length, 21.5 mm.; width, close to 3 mm.

This species, as in the case of *robustior*, is, in the absence of knowledge of the males, referred with some doubt to Strongylosoma.

324. STRONGYLOSOMA ROBUSTIOR, sp. nov.

TYPE.— M. C. Z. 4,656. PARATYPE.— M. C. Z. 4,657. New South Wales: Blue Mts., Katoomba (W. M. Wheeler).

The color is darker, being above chocolate-brown or in part (anteriorly and posteriorly) black, the sides and venter paler, fulvous. Anal scutum with caudal end ferruginous or fulvous. Legs distally light brown and proximally fulvous, instead of red as in the other species.

Lateral ends of collum rounded. Strongly margined laterally. Above margining sulcus a little coriariously roughened.

Surface of the other tergites nearly smooth, a few weak, irregular longitudinal sulci and some finer ones giving a vague coriarious appearance. No longitudinal median sulci but a deep transverse sulcus on each tergite from the fifth to the eighteenth, the sulcus extending nearly to the keel on each side. Keels of second segment well below the others as usual, the anterior corner of each not produced, subrectangular, the posterior corner rounded. Other keels low but distinct throughout length, set off above by a sharply defined longitudinal sulcus. Keels of porigerous segments much thicker than the others as usual, but narrowing to an angle behind, the ventral margin running obliquely dorsocaudad to meet the upper one. Pore caudad of middle. Posterior angles not produced caudad of caudal margin of tergites.

Pleural keels are present on the second, third, and fourth segments, whereas in *S. rubripes* they occur only on the second and third; the keel of the second segment much lower down than the other two. Above level of each leg of fourth segment a low, stout, distally truncate process. On succeeding segments a slender process above base of each first leg and a stouter lower one above base of the second leg.

Anal scutum with cauda long, wide, concave beneath, caudal margin mesally excised. Valves strongly margined; each with two long setae. Anal scale caudally convexly rounded; with the usual two long setae.

Length (female), near 42 mm.; width, 4.6 mm.

A species evidently close to *S. rubripes* Koch, which was based on a female from Brisbane.

325. STRONGYLOSOMA RUBRIMARGINATUM, sp. nov.

TYPE.— M. C. Z. 4,896. PARATYPES.— M. C. Z. 4,897. New South Wales; Wentworth Falls (W. M. Wheeler).

Color solid shining black excepting the keels and cauda which are bright red. Antennae and legs brown.

Head with a deep sulcus across vertex to level of antennae; crossed by short transverse striae.

Collum rounded below and margined as usual. Surface with irregularly distributed short impressed lines running in various directions.

Tergites without median longitudinal sulcus. Each from the fifth on with a transverse sulcus across metazonite, this at first short but on most extending from keel to keel. Keel of second segment below others as usual. Pleural keels present on second, third, and fourth segments, that of the second longer and much lower down than the other two. Second to fifth segments particularly with sides below keels densely granularly roughened, the corresponding surface on other segments becoming smoother. The usual processes above legs.

Cauda long; distal margin slightly incurved. Anal valves strongly margined, with the usual two long setae.

Width, 3.3 mm.

Referred with some doubt to Strongylosoma pending the discovery of the male.

326. STRONGYLOSOMA QUAESITUM, sp. nov.

TYPE.— M. C. Z. 4,889. PARATYPE.— M. C. Z. 4,890. New South Wales: Southerland (W. M. Wheeler).

Metazonites mahogany above, paler down the sides; prozonites fulvous with a large dark spot above on each side of the middorsal region and one on each side. Antennae light brown over a paler background excepting sixth or sixth and seventh articles whose color is darker, chestnut or black. Anal scutum paler over cauda; valves dusky over a light background. Legs fulvous brown.

Collum narrowly rounded below; anterolateral portion of margin long and straight across the base of gnathochilarium; narrowly margined below and over the oblique part of edge. Keel of second segment narrow and thin, carried far down as usual. Other segments wholly lacking any trace of keels, the body being thus nearly cylindrical. Segments deeply constricted, the encircling groove pearled or crossed by numerous short, impressed lines. Cauda distally rather deeply notched.

Length, near 22 mm.; width, 2.25 mm.

Referred provisionally to this genus in absence of knowledge of the male.

327. STRONGYLOSOMA SIGNATUM Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 483, pl. 21, fig. 10.[1]

Strongylosoma signatum Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 273.[2]

LOCALITIES.— Halmaheira: Soah Konorah.[1, 2] Kei Islands: Great Kei.[2]

328. STRONGYLOSOMA KUKENTHALI Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 484, pl. 21, fig. 9.[1]

LOCALITY.— Celebes: Minahassa.[1]

329. STRONGYLOSOMA HETAIRON Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 485.[1]

LOCALITY.— Celebes: Minahassa.[1]

330. STRONGYLOSOMA RUBRIPES (L. Koch).

Polydesmus (*Strongylosoma*) *rubripes* L. Koch, Verh. Zool. bot. gesellsch. Wien., 1867, **17**, p. 247.[1]

LOCALITY.— Queensland: Brisbane.[1]

331. STRONGYLOSOMA SEMONI Attems.

Semon's Forschungsreise, 1898, **5**, p. 510.[1]

LOCALITY.— Queensland: Burnett District.[1]

332. STRONGYLOSOMA INNOTATUM Karsch.

Polydesmus (*Strongylosoma*) *innotatum* Karsch, Archiv nat., 1881, **47**, p. 42.[1]

LOCALITY.— New South Wales: Sydney.[1]

333. STRONGYLOSOMA ELEGANS (Silvestri).

Atropisoma elegans Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 12.[1]

LOCALITY.— Queensland: Gayndah.[1]

This species is the type of Atropisoma Silvestri. Without knowledge of the male the significance of the genus is difficult to determine.

334. STRONGYLOSOMA LUXURIOSOMUM Silvestri.

Ann. Mus. civ. Genova, 1895, **34**, p. 643.[1]

LOCALITY.— Dutch New Guinea: Sorong.[1]

335. STRONGYLOSOMA MACULATUM Silvestri.

Ann. Mus. civ. Genova, 1895, **34**, p. 642.[1]

LOCALITY.— New Guinea: Moroka.[1]

336. STRONGYLOSOMA ALBIPES Silvestri.

Ann. Mus. civ. Genova, 1895, **34**, p. 644.[1]

LOCALITY.— New Guinea: Moroka.[1]

337. STRONGYLOSOMA OENOLOGUM Silvestri.

Ann. Mus. civ. Genova, 1895, **34**, p. 644.[1]

LOCALITY.— New Guinea: Moroka.[1]

338. STRONGYLOSOMA SANGUINEUM Silvestri.

Ann. Mus. civ. Genova, 1895, **34**, p. 645.[1]

LOCALITY.— New Guinea: Moroka.[1]

339. STRONGYLOSOMA VERSICOLOR Silvestri.

Ann. Mus. civ. Genova, 1895, **34**, p. 645.[1]

LOCALITY.— New Guinea: Gerekanumu, Astrolabe Mts.[1]

340. STRONGYLOSOMA LONGESIGNATUM (Silvestri).

Eustrongylosoma longesignatum Silvestri, Ann. Mus. civ. Genova, 1898, **38**, p. 442.[1]

LOCALITY.— British New Guinea: Buccajon.[1]

341. STRONGYLOSOMA ORTHOGONA (Silvestri).

Eustrongylosoma orthogona Silvestri, Ann. Mus. civ. Genova, 1898, **38**, p. 442.[1]

LOCALITY.— New Guinea: Ramoi.[1]

342. STRONGYLOSOMA ENSIGER Karsch.

Polydesmus (*Strongylosoma*) *ensiger* Karsch, Archiv nat., 1881, **47**, p. 42.[1]

LOCALITY.— New Zealand.[1]

343. STRONGYLOSOMA NIGROVIRGATUM Carl.

Rev. Suisse zool., 1902, **10**, p. 567, pl. 10, fig. 1, 2.[1]

LOCALITY.— Victoria: Melbourne.[1]

PHLYCTODESMUS, gen. nov.

Resembling Strongylosoma but characterized by having head, all metazonites (excepting sternites), and the anal tergite and valves densely granular as in Microporus, the tubercles setigerous in part. Keels wholly lacking, the tergites at most somewhat angularly thickened at level of pores. The pores not elevated. The keel-like thickening of second tergite extended forward at lower end against or over inferior end of first tergite and the border of cardo of mandibles. Tergites without transverse sulci. Body narrowest in region of third and fourth somites. Composed of head and twenty segments. Pores on segments five, seven, nine, ten, twelve, thirteen, and fifteen to nineteen. Prozonites sharply set off from the metazonites. Antennae short, clavate, the sixth article much the longest. Telopodite with the femoral region constricted proximally, strongly clavately widened distad, convex anteroectally, concave on the opposite face, the free edges more or less produced, distal region strongly curved, wide and thin, the free edges more or less uneven or dentate.

GENOTYPE.— *P. myrmecophor*, sp. nov.

344. PHLYCTODESMUS MYRMECOPHOR, sp. nov.

TYPE.— M. C. Z. 4,634. PARATYPES.— M. C. Z. 4,635, 4,638. Fijis: Nadarivatu (W. M. Mann).

General color chestnut-brown, the first tergite contrasting in being abruptly paler, fulvous in whole or at least its anterior part. Legs fulvous. Antennae brown.

The second tergite on each side extends forward as a rounded lobe a little overlapping the lower end of the first tergite and the caudal border of the cardo of mandibles. The metazonites elevated much above prozonites; between legs and lateral thickenings at level of pores densely finely granular with granules of uniform size and non-setigerous; the dorsal region also densely granular but in addition to the small granules with mostly seven transverse rows of larger setigerous tubercles, the setae moderately long and distally acute. Surface beneath pores not at all elevated and the lateral thickening not projecting at all over pleural region, the surface evenly continuous. Anal tergite triangular; the cauda subcylindrical, projecting widely beyond the anal valves, obscurely decurved, the tip narrowly truncate; dorsally densely granular like the other tergites, with transverse series of larger setigerous granules or tubercles. Valves densely granular, the margins strongly elevated but not sharply limited by furrows; each with two larger setigerous tubercles.

In the male gonopods the caudal ectal edge of the femoral division projecting strongly caudad in a triangular plate or process. The distal portion running mesad, and widely overlapping the other gonopod with which it fits closely together, a stout conical process at base in front of each gonopod. The telopodites at base where they are in contact between the coxae with mesal edges strongly dentate, the teeth interlocking, these teeth visible only when the gonopods are somewhat separated from each other.

Length (female), to near 14 mm.; width, 1.4 mm. The males smaller than the females.

FIJIODESMUS, gen. nov.

In general appearance closely resembling Phlyctodesmus but the granulation much finer, obscure or absent on the anal valves. A readily noticed difference is that the pores are distinctly though not strongly elevated, the rim of the elevation fringed with the short hairs. The gonopods very different in appearance, the coxae very large, the telopodites proportionately small, curving forward from between the coxae as slender, unsegmented and unbranched blades subparallel to each other throughout.

GENOTYPE.— *M. suprenans*, sp. nov.

345. FIJIODESMUS SUPRENANS, sp. nov.

TYPE.— M. C. Z. 4,636. PARATYPES.— M. C. Z. 4,637, 4,639, 4,642. Fijis: Nadarivatu, Waigonibu, Vanua Ava, Lomati, Lasema (W. M. Mann).

General color of males as in *Phlyctodesmus myrmecophor*, the somites above and laterally chestnut excepting the first tergite which is flavous. Legs flavous. Antennae brown. The females are a duller, less reddish brown.

Granulation of head much reduced, the granules exceedingly fine or obscure so that the surface appears smooth, densely clothed with short stiff hairs. The vertigial sulcus extending across vertex but not at all down the front.

Surface of first tergite like that of head but hairs much shorter and finer, appearing like bloom on fruit. Other tergites similarly with granules very fine and hairs of same character but in addition with transverse series of larger though still small granules each of which bears a stouter and longer distally finely pointed seta. Lateral swellings of metazonites more pronounced, bulging more over the pleural region. Second tergite extending forward on each side as in Phlyctodesmus. Pores opening through short cylindrical elevations like the mouth of a gunbarrel, the rim appearing finely fringed. Anal tergite in profile with dorsal line strongly convex, the cauda much exceeding the valves, decurved.

Length (female), up to 13 mm., the males smaller.

SOLOMONOSOMA, gen. nov.

Composed of head and twenty somites. Having general form of Orthomorpha. Keels reduced but distinct and very thick, with the second one much below level of the others. Antennae long and slender. Sternites without processes excepting the plate on the fifth in the male. Pleural keels on first to fourth segments, those of first and second subvertical and extending up to tergal keels. The usual processes above bases of legs. Sulcus across tergites present but this not sharply impressed and often obscure. Anal tergite broad, shovel-formed, caudally subtruncate. First legs of male strongly thickened; third joint at base below with a large process as in Antichiropus and Somethus. Hairs on ventral surface of tarsus in male more numerous than on others. Gonopods of male unsegmented beyond second joint. Telopodite long, widening distad, thin and plate-like, at end with two short processes of which the ectal is typically broad and distally blunt, the mesal narrow and distally acute.

GENOTYPE.— *S. manni*, sp. nov.

346. SOLOMONOSOMA MANNI, sp. nov.

TYPE.— M. C. Z. 4,992. PARATYPES.— M. C. Z. 4,993, 5,008. Solomons: Auki (W. M. Mann).

Typically black above with posterior portion of keels yellow to reddish or reddish yellow, sometimes the lighter yellow obscure. Antennae black to deep brown. Legs fulvous with middle joints darker and of vaguely weakly reddish cast. Head paler across labral border and just above antennal socket on each side.

Vertigial sulcus sharply impressed to a little above level of upper margins of antennal sockets. Antennae slender, joints long except first and last; third joint a little longest, the fourth, fifth, and sixth subequal.

Tergites from third caudad with a median longitudinal sulcus, from fourth on with a transverse furrow which covers only middle region of plate and is often very shallow and sometimes vague. Behind the transverse sulcus commonly a number of longitudinal sulci on each side paralleling the median one. Anal tergite broad, distally mesally indented, the ventral surface concave, caudal region or cauda depressed below level of anterior region.

Legs very long.

In gonopods of male the telopodite strongly clavately widening distad, the mesal edge of the main plate toward distal end broadly extended mesad and bent up dorsad, the mesal part thin and translucent, the distomesad corner subrectangular. The mesal distal process weakly doubly curving, abruptly more slender and curved at tip. The ectal process broadly expanding distad, distal edge a little convex, extending at mesodistal corner into a spine-like lobe which bends somewhat ventrad and has commonly a minute tooth on its caudal edge near middle; the outer lobe broader and more rounded.

Length (male type), 29 mm.; width, 3 mm.

347. SOLOMONOSOMA DIDYMUS, sp. nov.

TYPE.— M. C. Z. 5,003. PARATYPES.— M. C. Z. 5,004. Solomons: Wainoni Bay (W. M. Mann).

In coloration very like *S. nigrum*, having a similarly black or brownish black coloration of dorsum and sides, with a large dull reddish middorsal spot on each tergite; but the posterior part of each keel is also of the same obscure reddish color. Antennae and legs black. Articles of antennae shorter, as in *S. nigrum*, than in *manni* and *maius*. Furrows of tergites obscure. Keels as usual. Anal tergite broad, corners a little rounded, posterior margin a little concave. Most clearly differentiated by the structure of the male gonopods. The outer distal process is shorter than in *S. nigrum*, less ribbon-shaped, with the cuneate distal expansion much larger, bent so as to be concave on the ventral side. Most distal process abruptly narrowed and curved over distal portion as in *manni*. On ectal edge of tibial division near middle of its length a triangular expansion with lower edge long and oblique and upper one short. Such an ectal angulation is also indicated in *nigrum* but it is much smaller. A prominent mesal expansion as usual.

Length (male type), 30 mm.

348. SOLOMONOSOMA MAIUS, sp. nov.

TYPE.— M. C. Z. 4,999. Solomons: Malaita, Ruma. PARATYPES. — M. C. Z. 5,000, 5,002. Solomons: Malaita, Niauva (W. M. Mann).

A larger species than the others. Resembling the genotype in its long yellow legs and light, yellow keels, but the dorsum is paler brown. Antennae and head a deeper brown.

Keels thick and smooth as usual and set off by distinct furrows. Tergites with longitudinal as well as transverse sulci distinct. Anal tergite broad, caudal edge truncate or weakly widely incurved, more as in the genotype than in *S. nigrum*.

Mesal edge of distal end of tarsal division of telopodite produced dorsomesad in a large, thin, subquadrate lobe. Outer process differing conspicuously from that of the other species in widening to an angle on its dorsal edge and then curving about mesad and again a little proximad in a wide hook which narrows distad.

Length (male type), 40 mm.

349. SOLOMONOSOMA NIGRUM sp. nov.

TYPE.— M. C. Z. 4,998. PARATYPES.— M. C. Z. 4,998. Solomons: Auki (W. M. Mann).

Black above and laterally, differing from *S. manni* in not having the keels light colored; a large middorsal dull reddish spot on each somite. Venter brown. Antennae and legs black.

In the antennae the second and third articles are longer than the following ones and the fifth and sixth are longer than the fourth. Vertigial sulcus as in the other species.

Transverse sulcus of tergites distinct over median part of plates though not sharply impressed. Longitudinal median sulcus weak. Keels thick, with edges wholly smooth; set off by distinct furrows. Anal tergite more narrowed caudad than in the other species, caudally truncate or only slightly concave.

Length (females), to 25 mm. Males smaller.

Easily distinguished by the structure of the male gonopods. In the telopodite the broad mesal edge more strongly bent dorsad; the mesal distal process is broader proximally with the slender tip less curved. The outer process is of uniform width, ribbon-shaped to the end where it expands clavately a little and is truncate; it curves cephaloectad.

350. SOLOMONOSOMA CONFIRMANS, sp. nov.

TYPE.— M. C. Z. 5,005. PARATYPE.— M. C. Z. 5,007. Solomons: Pamua (W. M. Mann).

The coloration of this species is like that of *S. nigrum,* the dorsum including entire keels black excepting the obscure reddish middorsal spots. Legs and antennae black. In other general characters also agreeing with that species though obviously larger and more robust.

Distinguished from *S. nigrum* and *didymus* in structure of the gonopods. These have the telopodites shorter and proportionately broader. It may at once be distinguished from the first of these in the much larger outer triangular expansion on the edge of the telopodite which is also farther distad; and from the second in the form of the outer distal process which is of nearly uniform width throughout its length, lacking the conspicuous large cuneate expansion of the end. In *didymus* the inner distal process surpasses the outer one while in *nigrum* the outer is but little the larger; in the present species the outer process is obviously the larger, the inner being distally very slender and somewhat angularly bent in its distal part. Just mesad of base of inner distal process the edge presents an acute tooth.

Length, to near 30 mm.

MIMOSOMA, gen. nov.

Composed of head and twenty segments. In general of the Orthomorpha form. The second keel large and below level of the others; other keels decreasing in size caudad and may be essentially obliterated on segments eighteen and nineteen; caudal angles short but more or less spinous. Anal tergite strongly narrowed caudad, rather narrowly furcate at end much as in Orthomorpha. Pleural keels present, often traceable as far as tenth segment or beyond. Sternites unarmed excepting processes from fifth one in male. Antennae slender, long, joints excepting first and last long, not much differing in length, the sixth clavately enlarged. First legs of male small, not thickened, the third joint without spur or other special modification. Characterized in structure of male gonopods. These much resemble those of Antichiropus in having the terminal seminiferous division strongly circularly coiled, the process arising on mesal side and curving first mesad, and then cephalad, ectad and back caudad and mesad. Unlike those of Antichiropus, however, the gonopods have the distal end of tibial division ending in a simply rounded lobe.

GENOTYPE.— *M. setosum*, sp. nov.

351. MIMOSOMA SETOSUM, sp. nov.

TYPE.— M. C. Z. 4,994. PARATYPES.— M. C. Z. 4,995. Solomons: Auki (W. M. Mann).

Color of dorsum from chocolate-brown to black, the keels not paler. Antennae the same dark color excepting last two articles, which are white, and commonly also the first two articles which are white, or at least much paler than the contiguous ones. Legs also whitish on proximal and distal joints with intervening ones dark.

Keels with caudal angles produced, spinous. Lateral edge of keels in anterior and middle regions with two or three small but sharp teeth or serrations, the number rising to four in the posterior region. Tergite with sharply impressed transverse sulcus. Surface strongly roughened with numerous more or less irregularly compressed tubercles which bear long stiff setae of which there are about four irregular transverse rows caudad of the sulcus and six in front of it. Keel essentially obliterated from the nineteenth segment and nearly so from the eighteenth.

Length, to 14 mm.

352. MIMOSOMA REDUCTUM, sp. nov.

TYPE.— M. C. Z. 5,010. PARATYPE.— M. C. Z. 5,011. Solomons: Fulakora (W. M. Mann).

Resembling *M. setosum* in general coloration though the dorsum is a less deep black, more brownish; antennae with the first two and the last two articles similarly white. Legs whitish. The species also resembles *setosum* in having the dorsal surface roughened with granules or minute setigerous tubercles; but this roughening is very much less marked with the hairs much sparser and rather weaker. The keels are proportionately smaller and obviously less elevated, the middorsal region appearing more arched, and the serrations on the lateral edges are much slighter. The keels of the eighteenth and nineteenth segments not abruptly reduced as in the other species. The cauda is shorter and distally broader, subtruncate, not furcate, with angle on each side acute as in *setosum*.

Length (female), 14 mm.

353. MIMOSOMA GLABRUM, sp. nov.

TYPE.— M. C. Z. 4,995. PARATYPE.— M. C. Z. 4,997. Solomons: Auki (W. M. Mann).

Similar in coloration to the preceding species but at once recognizable in having the antennae and legs uniformly pale throughout excepting that the last joint of the former has a narrow dark band about its proximal end. Antennae more slender with the joints shorter. The keels are wholly without serrations laterally and those of eighteenth and nineteenth segments not abruptly reduced as in the other form. A most marked difference is that the tergites in the present species are nearly smooth, showing but vague traces of roughening and essentially glabrous, the hairs being scattered, short, and weak. The transverse furrow of tergites weak in strong contrast with the condition in the other species.

Length (male type), near 10.5 mm. Female paratype much stouter and near 13 mm. in length.

354. MIMOSOMA SEQUENS, sp. nov.

TYPE.— M. C. Z. 5,012. Solomons: Fulakora (W. M. Mann).

This species resembles *M. glabrum* in having the tuberculation of the dorsum obliterated or reduced to fine obscure granulations with corresponding essential absence of hairs from most of surface. The tergites highly arched. Transverse sulcus obscure. Keels much reduced but clearly set off above by sulci; the posterior angles of most not at all produced, but in the posterior region the spinous points are evident though minute and inconspicuous. Cauda short, truncate, not incised and furcate as in *setosum*. In coloration this species may be at once distinguished from those above described in having the antennae dark, deep brown or blackish, throughout while the legs are pale as in the other forms. In the type the collum is white but this may not be normal. The dorsum otherwise colored as in *glabrum*.

Length, about 10.5 mm.

355. MIMOSOMA GRACILE, sp. nov.

TYPE.— M. C. Z. 5,014. Solomons: Wainoni Bay (W. M. Mann).

This is like the two preceding species in being essentially smooth and glabrous; but unlike those species the transverse sulcus of the tergites is deeply impressed and pronounced nearly to the keels. The keels are small though sharply set off; angles of most not at all produced, a few posterior ones showing short spinous points as in the preceding species; typically they show on the lateral edge two or three minute and widely separated denticles or points. Anal tergite rather strongly narrowed caudad, truncate at end. The dorsum is solid black. Like *M. setosum* the first two antennal articles are light colored but at other end only the seventh article instead of both sixth and seventh is white, the intervening articles black. Legs white. A very slender species.

Length, near 10.5 mm.

SOMETHUS, gen. nov.

Body having the general form of Strongylosoma; cylindrical, with the keels reduced, the second one below level of the others. Composed of head and twenty segments.

Antennae long and slender.

Sternites without processes excepting the usual plate on the fifth segment of the male.

Pleural keels present only on second and third segments in the genotype. A process ectad of the base of each anterior leg on each segment, a more obscure one opposite the caudal leg. Pores on segments V, VII, IX, X, XII, XIII, XV–XIX.

Characterized by the structure of the male gonopods. In these the telopodite gives rise near its base on the mesal side to a spur or blade; at the distal end it is bipartite, there being in the type also a short acute spur arising from the base of the more distal branch, the two distal branches in the form of moderately curved blades extending mesad nearly at right angles to the principal axis.

The first legs of the male thickened and strongly uncate; of the form of those of Antichiropus, the third joint bent and showing on the mesal side a thumb-like process. Tarsi of anterior legs with a dense pad of hair beneath as in that genus.

GENOTYPE.— *S. fuscipes*, sp. nov.

356. SOMETHUS FUSCIPES, sp. nov.

TYPE.— M. C. Z. 4,684. PARATYPE.— M. C. Z. 4,685. Australia (Henry Edwards).

The general color is a dark grey, in part of brownish tinge or dusky. Collum and vertex of head black. Legs and antennae brown to fuscous.

Vertigial sulcus sharply impressed down to level of antennae. Antennae slender, the second and third joints somewhat longest.

Collum well rounded on each side. Each anterior corner oblique, anterior margin straight at middle. Caudal margin straight. Margined laterally and along oblique part of anterior margin.

All keels set off above by a sharply impressed longitudinal furrow; mostly thick, especially the porigerous ones. Tergites from fifth to seventeenth with a weak transverse sulcus.

The cauda short and broad, plate-like, caudally truncate. Valves sharply margined. Last sternite or scale subtriangular, the sides strongly convex.

In the gonopods of the male the basal spur of the telopodite is a thin lanceolate blade narrowed at each end, a little twisted and extending distad parallel to telopodite proper. The two distal branches are flat blades; of these the more proximal (seminiferous) curves but little and extends almost directly mesad across the middle line, while the distal blade curves obliquely meso-caudad across and above the other one. There is a short angular process above the base of the distal branch.

Length (male), near 30 mm.; width, 2.8 mm.

ANTISOMA, gen. nov.

Composed of head and nineteen segments.

Antennae long and slender; second and third articles longest, the fourth, fifth, and sixth much shorter, subequal.

Segments narrowing in going from the middle forward to the head, the anterior ones much narrowest. First tergite of ordinary form.

Keels of second segment below the keels of contiguous somites. Keels in general narrow, but little raised from surface, high on sides, in no case with posterior angles at all produced. Pores on segments five, seven, nine, ten, twelve, thirteen, and fifteen to nineteen; on dorsal surface. Segments strongly constricted or furrowed between metazonite and prozonite, the latter in front of the furrow nearly as elevated as the metazonite. Metazonites each with a transverse sulcus caudad of which divided by finer sulci into large areas while on each side the tergite is divided into numerous small slightly raised subtubercular areas. Anal scutum triangularly narrowed caudad. Anal valves margined.

Small nodular elevations above bases of legs. In the male the first legs much reduced; the second ones larger but obviously much more slender than those succeeding. Tarsi of legs very long.

Gonopods with telopodite not segmented; each subcylindrical, excavated about base above coxa, narrowing distally into a more chitinous, short, flattened unbranched portion; proximally densely clothed with numerous subbacilliform bodies or stout setae; in front of gonopods in genotype two peculiar flattened, oval or spoon-shaped bodies, each on a slender flexible stalk. Gonopods extending caudoventrad.

GENOTYPE.— *A. wheeleri*, sp. nov.

357. ANTISOMA WHEELERI, sp. nov.

TYPE.— M. C. Z. 4,658. New Zealand: Wellington (W. M. Wheeler).

Dusky brown above, somewhat paler along transverse sulcus and in a median stripe in front of it. On the prozonites a yellow longitudinal mark on each side of the middle. Paler along back. Lower part of side with a broad but more or less irregular and interrupted longitudinal yellow stripe. Legs fulvous. Antennae brown.

Vertex of head crossed by a short fine sulcus; surface marked off into numerous small areas by a network of impressed lines or sulci; these also covering the face down to the labral region. Hairs very short above, becoming longer below level of the antennae.

Collum laterally strongly rounded; distinctly margined.

Second tergite with a low tooth projecting at anterior corner of each keel. Caudolateral corners of posterior segments oblique, the median part of tergite extending farther caudad than the lateral region; posterior angles of none of the keels at all produced. Of the large areas caudad of the transverse suture there are mostly six or seven on each plate.

Legs long and stout. Third joint of legs dorsally very conspicuously swollen or elevated except proximally. Tarsus much longer than any other segment, slender, moderately curved.

The chitinous distal region of the telopodite of gonopods is flattened from side to side; and expanded like the tail of a fish, the distal edge being similarly notched or excavated, curving a little dorsad; the chitinous structure is continued proximad as a narrow rim along the mesal side of the gonopod. Just proximad of terminal narrower chitinous portion there is from the dorsal side a low triangular plate projecting dorsad.

Width, 2.8 mm.

358. PRIONOPELTIS DASYS, sp. nov.

TYPE.— M. C. Z. 4,701. Fijis: Viria, Ruva River (W. M. Mann).

Brown or in part chocolate colored, the callum and head darker, the keels all yellow and the tip of the cauda somewhat ferruginous. Venter lighter brown. Legs proximally testaceous, distally flavous. Antennae dark brown.

Head with vertigial sulcus distinct down to level of antennal sockets. Surface densely granular or shagreened, in part rugose. Antennae long and slender.

Metagonites densely granular or shagreened both above and down the sides. Collum with a median longitudinal sulcus which is not evident over either anterior or posterior border regions. A deep transverse sulcus present from fourth to nineteenth segments, this extending across from keel to keel excepting on the fourth, on which it is abbreviated and on the nineteenth on which it is also short and rather indistinct. Margin of keels smooth, elevated, on the edge hollowed out only about and a little distance caudad of the pore, the non-porigerous keels not hollowed out as in *P. keleearti* Humbert.

Pleural keels evident on segments II to V; those on the second and third segments rather vertical than transverse, those of the two others thicker and more nearly longitudinal. Proemea near bases of legs as usual.

Cauda of anal tergite long, subcylindric, distally rounded, much exceeding the valves. The latter strongly margined, coriarious.

Length (female), near 43 mm.; width, 7 mm.

359. PRIONOPELTIS CLARUS, sp. nov.

TYPE.—M. C. Z. 4,630, Fijis: Somo Somo. PARATYPES.— M. C. Z. 4,631–4,633, 4,991. Fijis: Somo Somo, Kunibara, Wainganitu (W. M. Mann). Samoa: Apia (V. L. Kellogg).

Dorsum when in full color deep chocolate, the color extending out on the anterior end of the keels but the remaining portion of the latter fulvous.

Legs fulvous, tinged, except proximally, with brown. Pleural region a little paler than dorsum, venter palest.

Antennae moderately long and slender, the second to sixth articles inclusive but little differing in length. Head smooth, in part obscurely sparsely granular; below level of antennae with numerous straight hairs, with fewer above. Vertigial sulcus deep, extending to level of antennae.

Cervical plate with anterior margin smooth, evenly rounded from caudolateral corners. Surface densely granular, with an anterior, a posterior, and an irregularly doubled middle transverse series of larger setigerous tubercles. Other tergites from the third to the eighteenth inclusive with a well-marked transverse sulcus. All from second to nineteenth with well-developed keels having angles distinct, obviously elevated; each with two lateral setigerous teeth, one at the anterior angle and one near middle of length; posterior angles all acute, becoming more and more produced caudad, the processes of the last plates extending directly caudad, rather narrowly acute; lateral margin of keels shallowly longitudinally furrowed, the depression limited by a thin raised edge above and below, the furrow broadest on the poriferous keels. Dorsal surface of all tergites excepting the anal densely granular; each with three transverse rows of larger, more elevated setigerous tubercles, one across anterior border, one just caudad of the sulcus and one along the caudal margin. The hairs distally a little clavate. Sides of metazonites strongly granular like the dorsal surface but without the larger setigerous tubercles. Venter smooth.

Anal tergite triangular, caudally narrowly truncate. Surface more or less distinctly transversely rugose, without tubercles or granules excepting two transverse rows of setigerous ones, one series submedian and one a little in front of caudal end.

Gonopods of male just above femoral division of telopodite with a process or spur extending directly mesad and meeting that from the other gonopod, each spur somewhat expanded beyond the base and curved slightly caudad; the distal division above proximal end curving mesad and then ventrad in contact with that from the opposite member, the seminiferous branch closely applied to it throughout.

360. PRIONOPELTIS HAASTI (Humbert and Saussure).

Polydesmus (*Oxyurus*) *haasti* Humbert & Saussure, Verh. Zool. bot. gesellsch. Wien, 1869, **19**, p. 683.[1]

LOCALITY.— New Zealand: Auckland, Waikato River.[1]

361. PRIONOPELTIS BICOLOR Carl.

Rev. Suisse zool., 1902, **10**, p. 594.[1]

LOCALITY.— New Zealand: North Island.[1]

362. PSEUDOPRIONOPELTIS CINEREUS Carl.

Rev. Suisse zool., 1902, **10**, p. 597, pl. 10, fig. 23, 26.[1]

LOCALITY.— New Zealand.[1]

This is the type of the genus.

363. PSEUDOPRIONOPELTIS MARTINI Carl.

Rev. Suisse zool., 1902, **10**, p. 599, pl. 12, fig. 86–95.

?*Polydesmus* (*Oxyurus*) *serratus* Hutton, Ann. mag. nat. hist., 1877, ser. 4, **20**, p. 115.[1]

LOCALITY.— New Zealand: Dunedin.[1]

It seems impossible to identify this species or to determine its generic position from Hutton's meagre account; and as *serratus* is preoccupied, to do so is unnecessary.

364. ? POLYDESMUS (OXYURUS) WORTHINGTONI Hutton.

Ann. mag. nat. hist., 1877, ser. 4, **20**, p. 115.[1]

LOCALITY.— New Zealand: Dunedin.[1]

Probably not to be recognized without examination of the type. Hutton states that the segments are "eighteen or nineteen, the same as in the last."

TASMANODESMUS, gen. nov.

Composed of head and twenty segments. Antennae long and slender, distally clavate; second and third articles longest, the fourth, fifth, and sixth subequal. First tergite of ordinary size and form; nearly equal in width to the second. Tergites without sulci or these but obscurely indicated; wholly lacking tubercles or granulations, smooth; each with three transverse series of setae, the caudal one marginal, the others submedian and postmedian respectively, their setae arising from depressions or foveolae. Keels broad, horizontal, the posterior corners angular, in most, especially the more caudal ones, strongly produced; dorsal surface smooth; caudal margin smooth; lateral margin smooth or weakly serrate. Pores dorsal in position, located near beginning of posterior third of length; on fifth, seventh, ninth, tenth, twelfth, thirteenth, and fifteenth to nineteenth somites.

Anal tergite narrowed caudad into cauda of usual form, with transverse series of setae above. Coxae of male gonopods large but mostly concealed in lateral view. Telopodites long, split from distal end to near middle of length into three branches, the middle (seminiferous) of these longest, slenderly tipped, branches not coiled.

GENOTYPE.— *Tasmanodesmus hardyi*, sp. nov.

365. TASMANODESMUS HARDYI, sp. nov.

TYPE.— M. C. Z. 4,643. Tasmania (G. H. Hardy).

General color throughout dull brown. Legs a somewhat paler brown.

The head over the vertigial and frontal region uneven, with weak tubercular elevations and corresponding depressions; hairs straight, finely tipped, numerous.

Surface of first tergite also obscurely roughened; with numerous setae, like those of the head, arranged in transverse series. Anterior margin forming an even convex curve from one caudal margin at middle a little incurved. Keels not serrate. Keels of second tergite with caudal corners subrectangular, a small tooth at anterior corner, one near middle of side and one between these two, the two caudal teeth bearing each a short seta, a similar seta also at caudal angle. Keels of third tergite like those of the second, as are also those of the fourth excepting that the posterior angles are a little produced and somewhat less than rectangular while the anterior marginal tooth is more reduced. On the fifth keels the posterior angles are still more produced and more acute; the lateral serrations are weaker and more widely separated, the most anterior one smaller or nearly obliterated and another tooth evident nearer caudal corner. This extra posterior tooth evident on succeeding porigerous keels but not on the non-porigerous. In the posterior segments the teeth are weaker and often scarcely detectable. The angles become more and more produced and acute caudad.

Anal scutum with five transverse rows of setae each of which arises from a small tubercle. Valves with mesal borders a little elevated, not set off with distinct sulci; each with two long setae. Anal scale triangular with caudal end truncate, bearing two long setae.

Legs long; the tarsi specially long and moderately curved, much exceeding any other joint in length.

In the telopodite of the male gonopod the ectal process is slender and acutely pointed, only slightly curved; the mesal branch is a little longer than the ectal, broader, blade-like, and with distal end truncate or a little concave; the principal processes extending cephalad much beyond the other, near level of distal end of the mesal process geniculate, the end portion acute and extending cephalomesad to nearly meet the one of the other gonopod.

Length (male), near 24 mm.; width, 2.8 mm.

LISSODESMUS, gen. nov.

Closely related to Tasmanodesmus. The antennae differ from those of that genus in having the second and sixth articles longest, the third a little shorter, the fourth and fifth much shorter. Tergites smooth and shining, without sulci and also lacking the transverse series of setae present in Tasmanodesmus, excepting the first and the anal one. The posterior processes of the keels narrower and more acute. Tarsal joint of legs of ordinary length, straight, proportionately much shorter than in Tasmanodesmus. Telopodites of the male gonopods very long, in the type reaching to the anterior edge of the first pair of legs of the fifth segment. Coxae concealed in the cavity. Telopodite stout and parallel over proximal two thirds or so of length; distally presenting two principal branches similar in general form, each distally thin and narrowly foliate; on mesal side proximad of level of these principal branches a much smaller slender curved spur which in the type is itself bifurcate.

GENOTYPE.— *L. modestus*, sp. nov.

366. LISSODESMUS MODESTUS, sp. nov.

TYPE.— M. C. Z. 4,644. PARATYPE.— M. C. Z. 4,645. Tasmania: Russell Falls (G. H. Hardy).

The color is a light uniform brown as viewed with the naked eye; but under the lens it shows a fulvous background over which is a close network of brown. Legs and antennae fulvous.

Sulcus crossing vertex of head sharply impressed. A weaker transverse depression or sulcus between antennal sockets which is cingulate, at middle, the angle open ventrally. Head with numerous straight and rather long hairs.

Collum with a series of long erect setae along the anterior margin and another series parallel with the first and a little distance back of it.

Keels of second tergite each with fine lateral serrations or teeth each of which, excepting the smaller one at anterior angle, seems to have been tipped with a long seta. Keels of third and fourth tergites with but three lateral serrations, those of the fifth and succeeding tergites with four.

Cauda widely projecting beyond the anal valves, dorsally with six or seven transverse series of long setae. Mesal margins of valves conspicuously elevated, each valve with two setigerous tubercles. Scale strongly narrowed caudad; caudally truncate, a setigerous tubercle at each angle.

In the gonopods of male the mesal spur extends mesodistad and then directly distad; the ventral branch smaller than the dorsal, both acutely pointed. The mesal of the two principal branches a little distad of its base is geniculately bent mesad and then at once again distad, the distal part flattened and lanceolate in outline. The outer branch is slender and straight proximally but is thin and expanded distally, its outer margin convex, the mesal straight, as a whole curved mesad to touch with its tip the tip of the mesal branch.

Length, about 16 mm.; width 2 mm.

PAURODESMUS, gen. nov.

This genus is very close in its general structure to the Palaearctic Brachydesmus. Like that genus the body consists of the head and nineteenth segments and the general sculpturing is as in Polydesmus. It differs in having the keels more elevated, with the posterior angles produced into longer and more slender processes. The body is larger and darker than in that genus, more as in the usual Polydesmus forms. Unfortunately no male was secured so that the character of the gonopods cannot be given.

GENOTYPE.— *P. acutangulus*, sp. nov.

367. PAURODESMUS ACUTANGULUS, sp. nov.

TYPE.— M. C. Z. 4,660. Queensland: Kuranda (H. L. Clark).

Color dark brown above, in the middle and posterior regions of a decidedly reddish tinge on keels and back of the principal transverse sulcus.

Antennae moderately long, slender excepting the sixth article which is much thickened; lengths of second, third, fourth, fifth, and sixth articles respectively about .36 mm., .4 mm., 32 mm., .34 mm., and .43 mm. Vertigial sulcus fine, distinct.

Collum equal in width to head inclusive of mandibles, obviously shorter than the second tergite. Laterally subacutely narrowed, the anterior margin evenly convex between the lateral angles, the caudal margin convex between inner ends of keels with mesal portion straight. Anterior and lateral border thin, flat or rather a little upraised especially laterally, not distinctly margined except adjacent to lateral angle a little mesad from which is a second fine longitudinal sulcus; the plane area of the border is extended further caudad at the middle; along the border is a series of well-separated setae, each of which is borne on a small nodule. The area of the collum behind the border is divided into larger setigerous areas or low flat tubercles which form fine transverse rows of which the more anterior are somewhat irregular and incomplete.

On the other tergites there are the three transverse rows of large areas or tubercles as in Polydesmus, each tubercle bearing a bacilliform seta; in the anterior row are eight, in each other row six tubercles, not including two elevated setigerous areas on each keel, of which the posterior one bears the pore. Each keel has laterally three distinct serrations to which in posterior segments a fourth is added at the anterior corner, each tooth bearing at its apex a bacilliform seta. The posterior angles of all keels from the second caudad are distinctly produced, those from the fourth caudad strongly so, the processes in the posterior region especially long and narrowly acute.

Anal scutum strongly narrowed caudad; the cauda narrowly truncate, extending well beyond the valves; dorsal surface bearing numerous bacilliform setae each from a small tubercular base. Valves narrowly but sharply margined. Anal scale triangular.

Legs long; the tarsal joint especially long and slender.

Length, near 13 mm.; width, 1.6 mm.

368. OPISTHOPORODESMUS OBTECTUS Silvestri.

Term. füz., 1899, **22**, p. 206, pl. 9, fig. 5–7.[1]

LOCALITY.— New Guinea: Tamara Island.[1]

369. ASPHALIDESMUS LEAE Silvestri.

Zool. anz., 1910, **35**, p. 362.[1]

LOCALITY.— Tasmania: Hobart.[1]

370. AGATHODESMUS STEELI Silvestri.

Zool. anz., 1910, **35**, p. 362.[1]

LOCALITY.— New South Wales.[1]

371. ICOSIDESMUS HOCHSTETTERI (Humbert and Saussure).

Verh. Zool. bot. gesellsch. Wien, 1869, **19**, p. 690.[1] Carl, Rev. suisse zool., 1902, 10, p. 621, pl. 11, fig. 40–45.[2]

LOCALITIES.— New Zealand: North Island,[2] Auckland.[1]

372. ICOSIDESMUS OLIVACEUS Carl.

Rev. Suisse zool., 1902, **10**, pl. 11, fig. 49.[1]

LOCALITY.— New Zealand: North Island.[1]

373. ICOSIDESMUS VARIEGATUS Carl.

Rev. Suisse zool., 1902, **10**, p. 626, pl. 11, fig. 46–48.[1]

LOCALITY.— New Zealand: North Island.[1]

374. ICOSIDESMUS SCHENKELI Carl.

Rev. Suisse zool., 1902, **10**, p. 628, pl. 11, fig. 53, 54.[1]

LOCALITY.— New Zealand: North Island.[1]

375. ICOSIDESMUS SUTERI Carl.

Rev. Suisse zool., 1902, **10**, p. 629, pl. 11, fig. 50–52.[1]

LOCALITY.— New Zealand: North Island.[1]

376. ICOSIDESMUS NANUS Carl.

Rev. Suisse zool., 1902, **10**, p. 631, pl. 11, fig. 55, 56.[1]

LOCALITY.— New Zealand: North Island.[1]

377. PACHYURUS FASCIATUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 487, pl. 22, fig. 13; Syst. Polydes. 1900, pt. 2, p. 288, pl. 12, fig. 290, 291.[1]

LOCALITIES.— Halmaheira: Gimia, Soah Konorah; Putani. Ternate.[1]

378. PACHYURUS XESTALOMA Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 22, p. 488.[1]

LOCALITY.— Celebes: Minahassa.[1]

379. PACHYURUS ERYTHROKREPIS Attems.

Abhandl. Senckenb. gesellsch., 1897, p. 489, pl. 22, fig. 12; Syst. Polydes., 1900, pt. 2, p. 287, pl. 12, fig. 283.[1]

LOCALITY.— Celebes: Minahassa.[1]

380. PACHYURUS TRICUSPIDATUS Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 14, pl. 2, fig. 69, 70.[1]

LOCALITY.— Timor.[1]

381. PACHYURUS SOLOMONIS Pocock.

Ann. mag. nat. hist., 1897, ser. 6, **20**, p. 445.[1]

LOCALITY.— Solomons.[1]

382. PLATYRRHACUS ATOPOGON, sp. nov.

TYPE.— M. C. Z. 4,677. Dutch New Guinea: Manokwari (Thomas Barbour).

The general color above is uniform brown over the metazonites with the prozonites a deeper, blackish brown. Legs and antennae brown, paler, more testaceous proximally.

Antennae exceptionally short; the joints short, strongly clavately thickened above base. Surface of head strongly granular; vertigial furrow as usual.

The collum equalling the head in width; widest anteriorly with the lateral ends narrowly rounded. Anterior margin straight across the middle, the extreme lateral portion set farther caudad than the median portion. Caudal region behind lateral processes very strongly convex. Surface densely granular; with four transverse rows of larger, prominent rounded tubercles of which those of the row across anterior border are closely arranged, while those of the caudal and two intermediate rows are widely separated.

Second tergite wider than those following; lateral margin of keels with five teeth between those at the corners whereas the keels of the third segment have but three, of the fourth two and of the following ones three again or in the most posterior ones four. The teeth all angular. Pores on the oblique surface close to the lateral margin from which removed by less than the diameter of the ring. Surface of metazonites densely coarsely granular to the edges of the keels; the tubercles of the three rows all prominent, well separated, those of the caudal row largest and projecting caudad of the posterior margin.

The anal scutum is partly broken off; what remains, however, shows that it widens in some degree caudad of the base. The valves are unusually flattened, the mesal margining narrow and low, the two tubercles of each valve large and rising above the margin; surface granular. The anal scale with surface granular; subtrapeziform, the caudal edge mesally scarcely obtusely angular, the setigerous area large.

The gonopods of the male are much shorter than in *P. ancylogon*. As in the latter species the telopodite is uncate distally, curving mesad and then proximad and again ectad. At the beginning of the distal curve a flat, slender, acute blade arises which runs mesad and curves but little beyond its base. Dorsad of this the principal strongly curving branch divides near the middle of its length, sending caudad a branch which abruptly expands beyond its base into a plate malleiform in outline, the plate giving rise from its caudoectal corner to a slender acute style; the process beyond this branch continues as a slenderly pointed style the tip of which curves back ectad as mentioned.

Length (male), near 37 mm.; width, 6.5 mm.

The gonopods somewhat suggest those of *P.* (*Eutrachyrachis*) *margaritatus* Pocock, a species also described from New Guinea (Victoria Mountain).

383. PLATYRRHACUS ANCYLOGON, sp. nov.

TYPE.— M. C. Z. 4,675. PARATYPES.— M. C. Z. 4,676. Dutch New Guinea: Manokwari (Thomas Barbour).

Deep chocolate to nearly black with a broad continuous median longitudinal yellow or testaceous stripe.

Head with a distinct but not sharply impressed vertigial furrow. Surface densely granular. Antennae reaching to third segment.

Collum wider than head. Decidedly widest anteriorly where it projects angularly on each side beyond a subquadrate posterior portion. Anterior margin straight except for a weak curving at the ends; caudal margin straight. Over the anterior border a series of larger tubercles behind which the plate is depressed; larger tubercles also along the caudal border. Surface in general densely tubercular or granular.

The anterior keels strongly bent forward. Caudal angles in general a little more acute than a right angle but obviously produced only on the most caudal segments. The lateral margins with large angular teeth lower on the second and immediately succeeding plates, there being on second and third two triangular teeth in addition to those at the corners. On the fourth and immediately succeeding plates a broader and deeper incision which is less obvious farther caudad where the margin appears slightly concave from end to end and may bear more teeth, the number increasing to three and four between the large corner angles. Pore-ring rather small, remote from the margin, in the anterior region being nearly three times its diameter to the bottom of the nearest incision and in the posterior region rather less than once and a half.

The tergites are coarsely granular over the keels and lateral part of dorsum of metazonites, the tubercles or granules becoming smaller and fewer mesad, the median yellow region being almost smooth.

Anal scutum convex and elevated at base caudad of which flat. Slightly widening from base to near middle of length and then strongly convexly rounded into a semicircle which is crenate, showing ten to twelve low crenations bearing long setae. Valves strongly margined, coarsely roughened and granular. Scale also granular, caudally weakly convex, with a large setigerous tubercle at each lateral end of caudal border.

Gonopods of male with telopodite distally flattened and strongly uncate, curving dorsad and then caudad and dividing into two long prongs of which the ectal is slender and acute, while the mesal one is proximally flat and blade-like but distally divided again into two slender acute prongs.

Length, to near 55 mm.; width, 10.8 mm.

384. PLATYRRHACUS (DIODONTODESMUS) MIMUS, sp. nov.

TYPE.— M. C. Z. 4,983. PARATYPES.— M. C. Z. 4,984. Solomons: Fulakora (W. M. Mann).

In the form of the gonopods much like *P. verrucosus* (Pocock); but the erect distal process is proportionately longer and more angulate proximally, while the curving transverse prong, though very similar, takes its origin more dorsad and mesad than represented for *verrucosus*.

It is a notably smaller species than *P. verrucosus*, the male having a width of only 5.2 mm. as against 9 mm. in the other species. The dorsum is but little arched, in this contrasting strongly, *e. g.*, with *gonethus*, being more of the Polydesmus form. The keels typically weakly protruding only at ends, the intervening region merely concave or in some with one weak rounded tooth or angle or sometimes more. The pore is on the oblique surface at the lateral border less than its diameter from the edge. On posterior plates the three rows of tubercles are distinct and subequal but on anterior plates the middle one may be more weakly developed and sometimes almost obliterated.

Head strongly tuberculate throughout. Antennae heavy.

Color deep brown, prozonites somewhat paler; lateral borders of keels light brown to obscure fulvous.

385. PLATYRRHACUS GONETHUS, sp. nov.

TYPE.— M. C. Z. 4,981. PARATYPES.— M. C. Z. 4,982. Solomons: Fulakora (W. M. Mann).

General color dark brown with extreme lateral edges of keels narrowly yellowish or the lighter color sometimes not evident; prozonites of same color as metazonites or a lighter brown, in immature specimens often whitish.

Antennae of uniform thickness beyond basal joint, reaching to or a little beyond middle of second somite. Surface of head strongly granular excepting lower middle region of labrum which is smooth.

Collum exceeding the head in width. Widest in front of middle of length, the caudal margin at sides bending more strongly forward to the lateral processes than the anterior. Surface densely tuberculate throughout, the tubercles larger laterad; a series of larger tubercles along anterior border and one along caudal.

Second tergite wider than those following; teeth or projecting tubercles strongly marked along anterior edge; lateral margin also with sharply defined teeth, these four in number between the corner ones, as on the third and fourth tergites which are similarly strongly toothed on anterior edges of keels. Succeeding keels mostly normally with four lateral teeth, though some of the posterior ones have five. Teeth prominent but rounded and tuberculiform. Pores dorsal in position and removed from lateral margin by from three to four times their diameter (inclusive of rim). Dorsal surface of tergites with three transverse rows of large, rounded, well-separated tubercles; between these rows in middorsal region are scattered smaller tubercles, the surface otherwise roughened with finer granulations, while laterad and especially on the keels larger tubercles are present in the intervening spaces so that the rows of large tubercles as such are there often not distinctly separable.

Anal scutum subsemicircular, a little more strongly convex in middorsal region, on each side of median caudal region three large but low crenations from each of which arises a large seta. Proximally with transverse rows of obscure tubercles; and on distal half two large setigerous tubercles.

The gonopods of the male place the species in the relatively small group in which the primary distal prongs are subdivided. Gonopod anteriorly curving up dorsad and then caudad and again ventrad; near middle of anterior part of this curve arises the first or ectal prong which is simple, the ventrally directed tip acute; in the angle just above its base arises a much more slender, finely pointed process of about equal length; the principal, more mesal and dorsal, prong is tripartite, the ectal, more proximal, branch being straight and extending subectad, the other two branches curved, with the mesal one a little stouter and longer than the other.

Length of male (type), near 42 mm.; width, 8.2 mm. Width of female to 9.25 mm.

386. PLATYRRHACUS FALLENS, sp. nov.

TYPE.— M. C. Z. 4,985. PARATYPE.— M. C. Z. 4,986. Solomons: Fulakora (W. M. Mann).

Metazonites dark brown; prozonites with brown in a spot on middorsal region, on each side and ventrally, the intervening portions yellow; borders of keels typically fulvous. In one female the prozonites are nearly uniform in color and the lateral borders of keels are not lighter.

Surface of head uneven, most of it strongly granulotubercular, the granulations becoming finer toward clypeal region the lower part of which is smooth. Antennae moderately slender, uniform, light colored.

Dorsum more moderately arched, much less strongly than in *P. gonethus* but more strongly than in *mimus*. Three rows of tubercles on tergites distinct, the tubercles moderate or small in size, rounded, widely separated; on some plates the tubercles of median and anterior row are smaller in the mid-dorsal region. The very large pores are very characteristic, each situated on the border slope of keel about its radius or but little more from the edge. Lateral teeth of keels uniform, usually three between corner ones, on some four and sometimes, in the posterior region, five.

Length (male type), near 55 mm.; width, 5.5 mm.

Most easily distinguished by the form of the gonopods of the male which are of the type with more than two distal branches. The gonopod curves up dorsally and back proximally as in *P. gonethus*, etc. On the ectal side at the beginning of the curve are two processes, a proximal one bending back proximad in a hook and a more slender straight one running dorsoectad and slightly cephalad. The main prong divides into two proximally directed, acutely pointed, processes of which the mesal one is larger and more curved.

387. PLATYRRHACUS SCHISTOGON, sp. nov.

TYPE.— M. C. Z. 4,987. PARATYPES.— M. C. Z. 4,990. Solomons: interior of Malaita, Atta, Auki (W. M. Mann).

Most like *P. fallens* in the character of the male gonopods. There are similarly two processes from ectal side but these arise farther up on the curve and are more separated at base with both running proximad and the more proximal one but little more curving than the other. The principal prong bifurcates distally as in the other species into two curved branches of which the mesal is stouter and longer; but unlike the other species there springs from near the base of these two branches a third process which appears as a straight slender spur that runs ectad.

The color is black excepting the lateral borders of keels which, with the legs and antennae, are yellow.

As in the preceding species the posterior row of dorsal tubercles are better and more uniformly developed than the others. The pores are obviously much smaller and are removed from the lateral edge by somewhat more than their diameter. Lateral margin of keel normally with two or three large rounded teeth, or in posterior region with one or two small intercalary additional ones, between the corner ones, the interval caudad of the first of these teeth larger and deeper.

Head only weakly roughened, tubercles rather small and not dense.

Length (male type), near 34 mm.; width, 6 mm. Width of female, 7.5 mm.

388. PLATYRRHACUS KATANTES Attems.

Syst. Polydes., 1900, pt. 2, p. 326, pl. 14, fig. 316.[1]

LOCALITY.— New Guinea: Astrolabe Bay.[1]

389. PLATYRRHACUS TUBEROSUS (Pocock).

Stenonia tuberosa Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 131.[1]
Cyrtorachis trifidus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 13, fig. 17–19.[2]
Platyrrhacus trifidus Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 270.[3]

LOCALITIES.— Kei Islands: Great Kei, Kei-Dulau,[1] Elat Warka, Waor.[3] Aru Islands:[2] Sungi Manumbai, Wakaui, Sungi Panua Bori, between Dabo and Wangil, Wammer, Seltutti, Kobroor, Sungi Kolobolo.

390. PLATYRRHACUS MARGARITATUS (Pocock).

Eutrachyrrhachis margaritatus Pocock, Ann. mag. nat. hist., 1897, ser. 6, **20**, p. 442.[1]

LOCALITY.— New Guinea: Victoria Mountain.[1]

391. PLATYRRHACUS VICTORIAE (Pocock).

Eutrachyrhachis victoriae Pocock, Ann. mag. nat. hist., 1897, ser. 6, **20**, p. 442.[1]

LOCALITY.— New Guinea: Victoria Mountain.[1]

392. PLATYRRHACUS SANGUINEUS (Pocock).

Taphodesmus sanguineus Pocock, Ann. mag. nat. hist., 1897, ser. 6, **20**, p. 440[1]

LOCALITY.— Celebes: Minahassa.[1]

393. PLATYRRHACUS WOODFORDI (Pocock).

Diontodesmus woodfordi Pocock, Ann. mag. nat. hist., 1897, ser. 6, **20**, p. 443.[1]

LOCALITY.— Solomons.[1]

394. PLATYRRHACUS DIONTODESMUS Attems.

Syst. Polydesm., 1900, pt. 2, p. 328.

Diontodesmus verrucosus Pocock (*nom. preocc.*), Ann. mag. nat. hist., 1897, ser. 6, **20**, p. 444.[1]

LOCALITY.— Solomons.[1]

395. PLATYRRHACUS CONCOLOR (Peters).

Polydesmus (*Stenonia*) *concolor* Peters, Monatsber. Akad. wiss. Berlin, 1864, p. 544.[1]

Platyrrhacus concolor Attems, Syst. Polydesm., 1900, pt. 2, p. 321.[2]

LOCALITIES.— Ternate: Dodinga, Mati.[1, 2] Halmaheira.[2]

396. PLATYRRHACUS COMPLICATUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 492, pl. 22, fig. 17, 18; Syst. Polydesm., 1900, pt. 2, p. 323, pl. 14, fig. 337, 338.[1]

Eutrachyrhachis gestri Silvestri, Ann. Mus. civ. Genova, 1898, **38**, p. 443.

LOCALITIES.— Ternate. Halmaheira. Gimia.[1]

397. PLATYRRHACUS ANNECTENS (Humbert and Saussure).

Polydesmus (*Stenonia*) *annectens*, Humbert & Saussure, Verh. Zool. bot. gesellsch. Wien, 1869, **19**, p. 677.[1]

LOCALITY.— Moluccas.[1]

398. PLATYRRHACUS HAPLOPUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 494, pl. 22, fig. 14;[1] Syst. Polydesm., 1900, pt. 2, p. 323, pl. 14, fig. 324.[1]

LOCALITY.— Halmaheira: Soah Konorah.[1]

399. PLATYRRHACUS GEORGOS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 494.[1]

LOCALITY.— Halmaheira: Soah Konorah.[1]

400. PLATYRRHACUS AMAUROS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 493.[1]

LOCALITY.— Ternate.[1]

401. PLATYRRHACUS AMBLYODON Attems.

Syst. Polydesm., 1900, pt. 2, p. 325, pl. 14, fig. 335.[1]

LOCALITY.— Pelew Islands.[1]

402. PLATYRRHACUS PERGRANULOSUS Silvestri.

Ann. Mus. civ. Genova, 1895, **34**, p. 639.[1]

LOCALITY.— New Guinea: Moroka.[1]

403. PLATYRRHACUS INSULARIS (Humbert and Saussure).

Polydesmus (*Stenonia*) *insularis* Humbert & Saussure, Verh. Zool. bot. gesellsch. Wien, 1869, **19**, p. 671.[1]

LOCALITY.— Moluccas.[1]

404. PLATYRRHACUS MOLUCCENSIS (Peters).

Odontodesmus moluccensis Peters, Monatsber. Akad. wiss. Berlin, 1864, p. 543.[1]
Taphodesmus moluccensis Cook, Brandtia, 1895, **1**, p. 1.

LOCALITY.— Moti.[1]

405. PLATYRRHACUS PERGRANULATUS (Silvestri).

Acisternum pergranulatum Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 13.[1]

LOCALITY.— South Celebes: Bantimurung.[1]

406. PLATYRRHACUS DADAYI (Silvestri).

Eutrachyrhachis dadayi Silvestri, Term. füz., 1899, **22**, p. 208, pl. 10, fig. 15–17, pl. 11, fig. 18–21.[1]

LOCALITY.— New Guinea: Astrolabe Bay, Erima.[1]

407. PLATYRRHACUS BEAUFORTI Attems.

Bijdr. dierk., 1915, **20**, p. 6, pl. 1, fig. 3–6.[1]

LOCALITY.— Ceram: Honitetu.[1]

408. PLATYRRHACUS MEDIOTAENIATUS Attems.

Bijdr. dierk., 1915, **20**, p. 7, pl. 1, fig. 7.[1]

LOCALITY.— Ceram: Honitetu.[1]

409. PLATYRRHACUS PULIGER Attems.

Bijdr. dierk., 1915, **20**, p. 7, pl. 1, fig. 8, 9.[1]

LOCALITY.— Waigeu: Kaiawat, near Beo, Bahan.[1]

AIPOTROPIS, gen. nov.

Composed of the head and twenty segments. Thirty-one pairs of legs. Head completely, or very nearly completely, covered by the first tergite. Antennae long; strongly clavate distad of end of third article, the fifth and sixth articles much enlarged, the seventh again narrower, subconical; the fifth article much the longest, in length about equalling the sixth and seventh together. Collum with anterior and lateral borders together forming an even semicircular line. The free border or rim crenate as in Lophodesmus, radial sulci similarly dividing it into ten lobes. Dorsum of tergites in general low, only weakly convex; the keels high, but little below highest part of dorsum and much above the middle level of the body. Keels broad, nearly horizontal, lateral and caudal border divided into lobes by radial sulci, the margin crenate or lobate. Surface of tergites including keels out as far as the border lobes covered with numerous minute tubercles or coarse granules; in addition two submedian longitudinal rows of large tubercles and a row on each side, each of the four rows in each tergite consisting of three well-separated tubercles. Posterior angles of several plates produced. Pores on segments five, seven, nine, ten, twelve, thirteen, and fifteen to nineteen not borne on cones or special tubercles; each removed from margin, occurring on upper surface of caudolateral lobe. Anal tergite exposed from above; presenting two prominent ridges projecting caudad as rounded tubercles over the small, subconical pygidium proper. Coxal pieces of male gonopods small, not at all enlarged as in Lophodesmus though somewhat similar in form and position; the distal element very elongate, extending forward over the preceding segment and bifurcate into two short branches at tip.

GENOTYPE.— *A. atopus*, sp. nov.

410. AIPOTROPIS ATOPUS, sp. nov.

TYPE.— M. C. Z. 4,600. Fijis: Lomati (W. M. Mann).

General color of metazonites above brown. The keels below brown distally but fulvous in a broad band across base. Pleural region again brown and the venter fulvous. Legs fulvous. Antennae with background fulvous, the first four and the ultimate article tinged with brown.

The head above level of antennae very densely finely tubercular and granular. In the type the left antenna greatly exceeds the right in size, the latter probably a degenerated one.

Rim of collum narrow, lobes considerably thickened. Middle region densely finely tubercular and granular; with two transverse rows of large rounded tubercles of which there are four in the anterior and six in the posterior.

Keels of other tergites typically trilobate laterally; in the posterior region the most posterior of these lobes is separated off by a deeper incision and shows a tendency to subdivide as it does essentially on the three segments preceding the ultimate. On the caudal margin of each keel in all but several of the most caudal segments are three lobes, decreasing in size mesad, ectad of the outer longitudinal row of large tubercles the caudal one of which on each tergite projects as a lobe from the caudal margin; between the lateral row of tubercles and the corresponding submedian one are two weaker crenations on the caudal margin and also two between the two submedian rows. At the base of each caudolateral lobe on the porigerous segments a large special tubercle excepting on the seventeenth, eighteenth, and nineteenth somites on which the pores are more widely removed from the margin. Beginning with the sixteenth segment the caudolateral corners of the keels are produced more and more caudad, the processes of the twentieth extending straight caudad and distally narrowly rounded.

Apical blades of male gonopods extending forward parallel with each other nearly to the anterior edge of the sixth segment; inner branch at tip short, very slender, acute, curved with concavity ectad, giving exit to the seminiferous duct, the tip lying close to or against the outer branch. Outer branch a flattened, distally somewhat expanded blade or plate.

Length, 9.5 mm.; width, 1.75 mm.

411. AIPOTROPIS INSIGNIS, sp. nov.

TYPE.— M. C. Z. 4,601. PARATYPES.— M. C. Z. 4,602, 4,609. Fijis: Nadarivatu, Vanua Ava (W. M. Mann).

The male gonopods are very similar in general structure to those of *A. atopus;* the principal or distal pieces are less narrowed below the bifurcation; a readily observed difference is in the inner or seminiferous distal branch which is stouter and distally less acute and beyond middle is not curved, extending straight distad well beyond and well apart from the outer division or plate.

The coloration in general similar to that of the preceding species; but the longitudinal band on under surface of keels weaker and largely obscured by encroachment of the darker pigment and on some keels wholly eliminated. Prozonites with median dorsal reddish brown area broader than in *atopus,* the yellow band each side correspondingly narrower. Antennae with first four articles brown, the fifth and sixth white, the seventh with background white but darkened with brown especially proximally. Granular frontal region of head blackish.

In the first tergite the emarginations are much weaker and the lobes with free margins only slightly rounded, broader than in the other species. Median portion of plate more depressed with the large tubercles of the two transverse rows less conspicuous. The surface of the tergites in general much more coarsely and strongly tubercular with the large tubercles of the four longitudinal rows much less prominent. The obviously more prominent tubercle cephalomesad of each pore in *A. atopus* not distinctly present in the present species. Pores on anterior plates considerably more widely removed from the margin. Lobes of keels in general less rounded, more angular.

A larger, more robust, species, the length of the type (male), being close to 12 mm. with the width 2 mm.

412. AIPOTROPIS VARIANS, sp. nov.

TYPE.— M. C. Z. 4,610. PARATYPES.— M. C. Z. 4,611. Fijis: Munia (W. M. Mann).

Coloration in general as in *A. insignis.* In the type the proximal articles of antennae but little darker than the others.

Antennae shorter; the fifth article shorter in comparison with the third.

The first tergite differs from that of the two other species in having a narrow rim in front beneath the free border and toward its caudal edge, this rim fitting with its lower edge against the head and expanding laterally into the usual end pieces. In the type it also differs in having twelve border lobes instead of only ten, the end lobes being subdivided; but in the young paratypical specimens the end lobes are large but not subdivided; whether always subdivided in adults it is impossible at present to say. The lobes of the keels in number and arrangement as in the other species. The marginal teeth more rounded than in *A. insignis.* Upper surface of tergites strongly densely tuberculate, the large tubercles of the four longitudinal rows prominent. A special elevation or tubercle on base of caudolateral lobe of each porigerous keel; on the other keels a very prominent elevation proximad of the middle lobe. Differing in that the caudolateral angles of the sixteenth keels are not or scarcely produced caudad beyond caudal margin, the seventeenth but little so, and the processes of eighteenth and nineteenth proportionately shorter. Dorsal cones of anal tergite large, not fully reaching end of cauda proper.

Length, 9.5 mm.; width, 1.6 mm.

413. Aipotropis lasemanus, sp. nov.

Type.— M. C. Z. 4,612. Paratypes.— M. C. Z. 4,613. Fijis: Lasema (W. M. Mann).

Distinguished from *A. atopus* and *insignis* in the structure of the gonopods. These are in general very similar. But they are shorter, reaching only to the anterior end of the prozonite, and are more strongly bowed mesad; the dorsal curve and the constriction at distal end less pronounced; the distal divisions are shorter and the mesal one on each side extends at first nearly horizontally mesad and then runs cephalad, the latter portion shorter than the former, crossing the one from the opposite gonopod, widely separated from the outer lobe and not extending distad beyond it or scarcely so. The apical division or blade with total length but two and a half times the greatest longitudinal diameter of the coxa as against three and a half times in *A. atopus.*

Coloration similar to that of *A. atopus* excepting that the background of the metazonites above is flavous with the dark brown or dusky color mostly confined to the coarser tubercles; first tergite entirely dark; ventral longitudinal fulvous band of keels more sharply limited than in *atopus.*

In the first tergite the free margins of the lobes much less convexly elevated. Median region very similar but the tubercles in general rather coarser. Border lobes of other tergites rather more thickened and somewhat more coarsely granular.

The anal segment very similar. Anal scale longer with the caudal margin between the tubercles strongly convex or angular instead of nearly straight.

Length a little uncertain because of broken condition of the type, but about 11.5 mm.; width, 1.8 mm.

PILOCHILUS, gen. nov.

Agreeing in general with Aipotropis. The first tergite not quite completely covering the head in dorsal view, a little of the latter being exposed in front. Most readily distinguished from the genus mentioned in having the lobed free border vertical in position and extended ventrad into a supplementary band the lower edge of which fits against the head; in the other genus such a supplementary band is weakly indicated only at each caudolateral end of the border. The anal tergite is larger, the cauda extending prominently beyond the paired dorsal processes. The lobes of the keels are more serrate in form. The male gonopods are in general similar; but the terminal branches of the blades are longer and stouter, the seminiferous one blade-like, the outer branch wide, curved. Head entirely smooth, upper part not tubercular as in Aipotropis. Antennae long, all articles much longer than thick; fifth and sixth much thickened; the fifth longest.

GENOTYPE.— *P. cynephor*, sp. nov.

414. PILOCHILUS CYNEPHOR, sp. nov.

TYPE.— M. C. Z. 4,603. PARATYPES.— M. C. Z. 4,604, 4,608. Fijis: Nadarivatu, Nasoqo (W. M. Mann).

Metazonites deep dusky or blackish brown above, the under surface of keels crossed longitudinally by a paler band which may be obscure; the pleural region of both metazonites and prozonites reddish or chestnut to black; venter pale brown to fulvous; prozonites above with a median longitudinal reddish brown or chestnut band set off on each side by a wide fulvous stripe. Head chestnut, much darker above level of antennae, the dark region enclosing numerous lighter areas. Antennae with first four articles chestnut, the fifth and sixth abruptly white as in species of Aipotropis, but the former more or less darkened at proximal end, the seventh article chestnut excepting distal end which is white. Legs fulvous or testaceous proximally, becoming darker, light chestnut distally.

Head above very finely coriarious, with trace of tubercles or granules, below level of antennae the roughening somewhat coarser. Vertex crossed by a distinct median longitudinal sulcus which ends far above the antennae. Antennae long, the fifth and sixth articles greatly thickened; fifth article much the longest, the third next.

Free edge of first tergite but little elevated. The crenations or lobes broad and low. Surface but little elevated, densely finely tubercular throughout; with the usual two transverse rows of larger tubercles; these prominent, large, and rounded, the first row embracing four, the second six of which the two median ones are adjacent to the caudal margin. The surface of the tergites in general strongly densely tubercular. Four longitudinal rows of larger, more prominent tubercles as usual; three tubercles in each series on each tergite but the most caudal of these lower and often inconspicuous or almost obliterated as such; in addition on each side of the non-porigerous tergites between the lateral row and the lateral lobes of the keels a single large tubercle in line with a large elevated tooth projecting from the caudal margin. Keels laterally coarsely serrate, there being three teeth on the keels of the second to sixth tergites inclusive, and thereafter three on the non-porigerous and four on the porigerous keels. Caudal angles of posterior keels more and more produced caudad, the processes of the fifteenth to nineteenth in particular long and subacute; the processes of the eighteenth and nineteenth keels very slender. The caudal margin of each keel just mesad of the caudal corner with a large obtuse tooth, the edge mesad of this weakly serrate; but caudad the entire caudal margin of tergites more strongly crenate, the crenations finally becoming more acute and on the eighteenth and nineteenth projecting as acute teeth. Pores above and well removed from margin, on base of caudal lobe, the surface about and beneath each one elevated as a low rounded mound. Venter of metazonites subdensely pilose. Last tergite large, triangular; at middle above two large conical tubercles and on each side in line with them a very slender marginal tubercle or cone; just proximad of the distal end a transverse row of four much smaller tubercles, the one at each end marginal, setigerous; on each lateral margin toward base a long slender tubercle bearing a long stout seta; four long setae at tip of cauda.

The apical pieces of the gonopods extending forward to the caudal edge of the ridge between the anterior legs of the sixth segment; they are rather broad flattened blades; the two terminal branches are both thin and flattened, blade-like, with the outer one curving mesad above the tip of the mesal one which is curved a little in the opposite direction.

Length (female), to ca. 15 mm.; width, 2.5 mm.

415. PILOCHILUS PALLIDIOR, sp. nov.

TYPE.— M. C. Z. 4,605. Fijis: Nadarivatu (W. M. Mann).

Contrasting with the preceding species in having the tergites light brown instead of deep, almost black, brown. The lighter markings are as in the other species but lighter fulvous in color.

The head is testaceous instead of chestnut, the first articles of antennae the same color, the fifth and sixth white as usual.

It is in proportion to length a decidedly narrower species.

The face is densely clothed with straight, moderately long hairs which extend up from clypeus to vertex.

The crenations or free edges of the marginal lobes are somewhat higher; on the median portion are much more prominent, of low conical form, instead of being very low and depressed.

On the other tergites the large seriate tubercles are arranged as in the other species; on the anterior plates particularly they are rather more conspicuous, and more conical in form. The serrations of the keels in general the same. A readily noticed difference is in the outermost large tooth on the caudal margin of each keel, this lying nearer to the lateral edge, with the excision between it and the caudolateral tooth or lobe more acute, the ectal side of the caudal tooth running a little ectad of caudad instead of clearly mesocaudad as it does in *cynephor*. The caudal margin of the tergites between the keels is more or less clearly crenate even in the first tergites instead of remaining straight until the posterior region is reached. The large paired dorsal tubercles of the anal tergite are obviously larger than in *P. cynephor* while the corresponding marginal tubercles are smaller; the cauda beyond the principal tubercles shorter and narrower, whitish in color, its tubercles less prominent.

Length, 15 mm.; width, 2.1 mm.

ATOPODESMUS, gen. nov.

Composed of head and nineteen segments. Antennae short and clavate. First tergite nearly completely covering the head from above; wholly lacking any distinct lobate border. Characterized especially by having the second tergite much wider than the first and also exceeding the following ones, widely expanded at each end with the anterior corner overlapping the first tergite and the posterior extension in the coiled animal extending far beneath the third keels; lateral margin with numerous crenulations. Succeeding keels much shorter (*i. e.* anteroposteriorly) and with fewer crenuli; caudad the marginal incisions deepen, on most leaving four separated lateral lobes. Pores located above base of keels near middle of length of segment and thus widely removed from the margin; apparently on segments five, seven, nine, ten, twelve, thirteen, and fifteen to seventeen inclusive; moderately prominent. Tergites all strongly tubercular, the tubercles uniform and extending out over keels, no middorsal series of larger tubercles. Last (nineteenth) tergite large, narrowed caudad with sides convex, widely overlapping the valves, dorsal surface densely tubercular.

Genotype.— *A. parvus,* sp. nov.

416. Atopodesmus parvus, sp. nov.

Type.— M. C. Z. 4,648. Paratype.— M. C. Z. 4,649. Tasmania (G. H. Hardy).

General color brown. Legs and antennae fulvous.

Head covered above by a median longitudinal sulcus. Surface above level of antennae densely finely granular, the granulations coarser above.

Tubercles of tergites small, uniform, densely arranged. On average tergites five or six transverse rows of tubercles. Tubercles each with a very short, curved seta. Lateral margin of second tergite with eight or nine crenulations. Other keels normally with four lateral crenuli or lobes of which the anterior tends obviously to recede caudad. Caudal margin of most keels with a single large conical tooth close to the base. Posterior angles of last few keels weakly produced.

Anal scutum above densely tubercular. Extending beyond valves with the margin extending or cupping down about them. Anal valves smooth; each with two setigerous tubercles situated about midway between mesal and ectal margins.

Length, near 6 mm.

417. Plusiodesmus felix Silvestri.

Term. füz., 1899, **22**, p. 209, pl. 11, fig. 22–25.[1]

Locality.— New Guinea: Tamara Island.[1]

418. Lophodesmus pusillus Pocock.

Weber's Reise, 1894, **13**, p. 372, pl. 22, fig. 12.[1]

Locality.— Flores: Maumerie.[1]

This is the type of the genus.

419. LOPHODESMUS LAMPRUS, sp. nov.

TYPE.— M. C. Z. 4,597. PARATYPES.— M. C. Z. 4,598, 4,599. Fijis: Somo Somo, Lasema (W. M. Mann).

The metazonites above are dark brown with the keels fulvous excepting along the margins where the dark color is maintained, or sometimes dark throughout. Prozonites and head fulvous, the latter punctate with brown above; legs, antennae, and porigerous cones paler, whitish.

The head conspicuously tubercular above the level of the antennae, the outer row of tubercles on each side curving ectad above. Hairs of face numerous, exceedingly short.

First tergite of usual form, presenting below a marginal lobate rim in which the emarginations are deep and the lobes well rounded; front face of the median portion steep, almost vertical; the height obviously exceeding the length; surface densely tubercular and with two transverse series of much more prominent tubercles which are widely separated, four tubercles in the anterior of these series and six in the posterior. Other tergites with three principal transverse rows of tubercles but an irregular and incomplete fourth row often traceable. Dorsal combs high, the three tubercles of each fused at base; the tubercles of the prominent lateral series also high and conspicuous. The submedian combs of three tergites preceding the ultimate progressively higher, those of the nineteenth basally fused together and projecting caudad widely beyond the anal tergite which is thus completely concealed from above. The keels of the second tergite laterally trilobed with the median lobe smallest; the other non-porigerous keels laterally bilobed excepting the seventeenth and eighteenth, which are trilobed. The porigerous keels are as if laterally trilobed with the caudal lobe subdivided and the pore-cone projecting freely between the two resulting smaller lobes. The marginal lobation and the position of the pore-cone readily distinguish this form from *L. pusillus*, the genotype, and the Javan *lobulatus*.

In the male gonopods in lateral view projecting below the large coxa, in a place bent forward and then slightly up at tip, somewhat avicular in form.

Length, to about 6.5 mm.; width, 1.1 mm.

420. TRESEOLOBUS CONFORMANS, sp. nov.

TYPE.— M. C. Z. 4,592. PARATYPES.— M. C. Z. 4,593. Fijis: Somo Somo (W. M. Mann).

Color above dark brown, the keels paler, more fulvous. Sternites with legs and antennae fulvous; head the same excepting frontal, region which is finely dotted with brown.

Body not quite five times longer than wide. Dorsum high, the keels narrow, strongly depressed.

Across the vertex of the head a furrow limited on each side by a prominent broad ridge which is weakly tubercular and covered with fine points like those of the tergites, this ridge bending ectad above as a much narrower and thinner ridge Labrum abruptly depressed below level of clypeal region.

Free border of first tergite with the usual ten marginal areas. Elsewhere the tergite is strongly convexly elevated, and covered with numerous, closely arranged prominently protruding rounded tubercles of which eight are larger than the others. Other tergites crossed with four transverse rows of closely arranged tubercles of which the most anterior and most posterior are most poorly developed and the posterior in particular are often incomplete; the usual two submedian crests formed by rows of larger tubercles, three in each row on each plate, not very conspicuous, no similar prominent lateral row on each side; two rows of small tubercles between these. Lateral margin of keels of second and of seventeenth, eighteenth, and nineteenth tergites trilobed, of others bilobed, the emarginations weak. Pore-papillae at apex of deeper emarginations in caudolateral corners, subvertical to surface. Last tergite prominently exposed from above, the margin crenate, showing six lobes; two smooth, continuous ridges corresponding to the median rows of tubercles of other plates, no tubercles elsewhere. Tubercles of median rows on penult tergite not more prominent.

Gonopods of usual general type.

Length of type, 5 mm.; width, 1 mm.

421. TRESEOLOBUS INCONSPICUUS, sp. nov.

TYPE.— M. C. Z. 4,594. PARATYPES.— M. C. Z. 4,595, 4,614. Fijis: Munia, Lasema, Somo Somo (W. M. Mann).

In coloration like the preceding species. It is a somewhat smaller and more slender form with similar structure and appearance. The keels are a little narrower and slightly less depressed. The transverse rows of tubercles are alike though with fewer tubercles in a row, normally twelve, as against fourteen in the average of *T. conformans*. The tubercles form distinct longitudinal rows whereas in *conformans* they are more singulàr. The tubercles of the two submedian longitudinal rows are much less prominent, being scarcely more elevated than the others on many of the tergites; correspondingly the ridges of the anal tergite are much lower and the lobes at their caudal ends do not project caudad of the adjacent lateral ones as they do in most species, the line of the apices of the four caudal lobes being thus nearly straight, the emargination separating off the anterior lobe on each side shallow the anterior lateral lobe equalling or exceeding in length the one caudad of it, whereas it is shorter in *T. conformans*. The lobation of the keels in general similar; but an obvious difference in that the excision opposite the angle of which the pore-cone stands is narrower and more caudal in position, not at the corner, the caudal lateral lobe thus extending farther caudad to the general line of the caudal margin of the tergite instead of lying obviously in front of it as it does in *T. conformans;* the cones are lower, rather thick, a little more remote from the margin.

Length, 4.6 mm.; width, .8 mm.

EUPORODESMUS, gen. nov.

Composed of head and twenty segments. Antennae moderately long and slender, clavate; the articles much longer than thick, the third and sixth longest, the fifth obviously shorter than the sixth; fifth and sixth articles at distal end above with a small group of sensory cones. First tergite completely covering the head from above. The free anterolateral border wide, horizontal, divided by radial sulci into twelve lobes but without corresponding emarginations, the margin being evenly continuous. Keels of other tergites widely horizontally extended; the lateral and caudal borders divided into lobes by radial sulci but the margins entire or with but slight emarginations. Surface of tergites not truly tubercular or granular but divided by deep furrows into convexly rounded large areas of which there are three transverse rows. Pores opening through short cones or subglobular elevations situated on dorsal side of keel remote from the margin, each occurring at the mesal end of the sulcus separating the caudolateral lobe from the one just in front of it. Pores on segments five, seven, nine, ten, twelve, thirteen, and fifteen to nineteen. Anal tergite large, triangular, fully exposed from above.

GENOTYPE.— *E. solitarius,* sp. nov.

422. EUPORODESMUS SOLITARIUS, sp. nov.

TYPE.— M. C. Z. 4,606. PARATYPE.— M. C. Z. 4,607. Fijis: Nadarivatu (W. M. Mann).

Color of tergites dark brown, on the keels showing under the lens numerous lighter areolations. Pleural region of both metazonites and prozonites also dark brown. Venter fulvous. Legs brownish in a network of lines over a fulvous background, the trochanters contrasting by their paler color with the other articles. Head above level of antennae dusky, almost black in type, the lower region areolated with light.

Vertex of head crossed by a shallow sulcus.

Median region of first tergite only moderately elevated, divided into large areas by weak or in part obscure furrows. On the second and third metatergites the region between the keels divided into only two transverse series of areas, while the succeeding ones show three. Of these the areas of the anterior series are largest, those of the posterior smallest and most irregular. The keels of the non-porigerous tergites each show three lateral lobes while on all the porigerous keels there are four. The caudal border of each keel shows two shorter sulci of which the more mesal is the shorter. The caudal margin of the second keel is nearly straight and transverse, while beginning with the second the margin curves more and more caudad in extending outward to the angle, the posterior corners in the posterior segments being strongly and subacutely produced. The caudal margin of the nineteenth segment alone is serrate, the projecting teeth six in number, acute. Last tergite triangularly narrowed caudad, the cauda very narrowly truncate. Above with two transverse rows of small setigerous tubercles, one row of four tubercles near the middle and the other but little removed from the caudal end, the lateral tubercles in each row marginal. Caudal margin of the rather large anal scale but slightly convex between the two marginal setigerous tubercles.

Length (female), 9.5 mm.; width, 1.75 mm.

JULOIDEA.

Julidae.

423. Julus (Ophiiulus) fallax Meinert.

The occurrence of this common European species in Tasmania and New Zealand, doubtless due to introduction, is worthy of note. It agrees closely with *J. fallax* as represented in England and Ireland. The gonopods (New Zealand specimens) seem to differ slightly in having the anterior laminae rather narrower and longer with the inner branches not reaching quite so near to the distal end of the outer branch, though more extensive comparisons may show this difference inconstant. The glandular processes of the second legs are longer than wide. Segments as in the typical form.

Localities.— New Zealand: Wellington, Day's Bay, Rotorna, Lake Takopema near Auckland, August 1914 (W. M. Wheeler). Tasmania (G. H. Hardy).

424. JULUS LUSCUS Meinert.

Nat. tidsskr., 1868, 3. R., p. 9.

Diploiulus luscus Silvestri, Fauna Hawaiiensis, 1904, **3**, p. 338.[1]

LOCALITY.— Hawaiian Islands: Hawaii: Kona.[1]
A common European species without doubt introduced by man.

CAMBALOIDEA.

CAMBALIDAE.

425. DIMEROGONUS ATER, sp. nov.

TYPE.— M. C. Z. 4,823. New Zealand: Day's Bay, near Wellington (W. M. Wheeler).

Differs in many features of the gonopods from *D. insulanus* Attems. The median plate of the anterior pair is smaller and narrower; it has the anterior end mesally acutely incised. The mesodistal process of the coxal piece of anterior gonopods differs; the membranous lobe adjacent to this process on ectal side is more slender, not pointed distad, and is longer, much exceeding the distoectal lobe on the end of which, instead of short hairs, there is a series of many long setae like those of the posterior or distal branch of the gonopod. The latter branch instead of being subvertical extends obliquely from its attachment distomesad, its distal end lapping over the tip of the posterior gonopod as well as concealing largely the pseudoflagellum; with long setae at the end. The posterior gonopods somewhat intermediate between the form in *D. insulanus* and *orophilus,* the distal joint not sharply set off, a somewhat curved and slightly twisted thin process extending beyond the stouter, distally truncate and setigerous lobe representing the end of the first or principal joint, the setigerous lobe being smaller than in *D. orophilus* and larger than in *insulanus.*

The general color is solid black throughout, excepting the middle part of collum and lower part of face, the extreme caudal margin of the anal scutum and the legs and antennae which are ferruginous; also an annulus about the caudal border of each segment is paler; the anterior region of annulus of ferruginous cast.

Number of segments, fifty-two.

Diameter (male), 3 mm.

426. Dimerogonus kaorinus, sp. nov.

Type.— M. C. Z. 4,865. Paratypes.— M. C. Z. 4,866. New Zealand: Kaori Forest, near Swainson (W. M. Wheeler).

Differs from *P. ater* chiefly in the character of the gonopods. The anterior median plate offers an easy means of distinction; this is constricted at middle, expanding from here clavately distad with the end bifurcate, the mesal excavation between the arms deep and rounded at bottom. The inner distal process of the coxal or anterior piece of the first gonopods is shorter, and differs in being clavately widened distad and in curving distoectad instead of being essentially straight.

The lower part of collum narrower, the lateral edge arising from the caudolateral corner more obliquely than in *ater*.

Coloration nearly as in *ater*.

Number of segments, forty-six to fifty-four.

Diameter of male, 3.1 mm.; of female to 3.9 mm.

427. Dimerogonus orophilus Attems.

Zool. jahrb. Syst., 1903, **18**, p. 84, pl. 7, fig. 1–6.[1]

Locality.— New South Wales: Blue Mts., near Sydney.[1]

428. Dimerogonus insulanus Attems.

Zool. jahrb. Syst., 1903, **18**, p. 86, pl. 7, fig. 7–14.[1]

Localities.— New Zealand: Day's Bay near Wellington, Plummerton (W. M. Wheeler). Stephens Island.[1]

429. Dimerogonus aveburyi Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 330, pl. 11, fig. 18–21.[1]

Locality.— Hawaiian Islands: Maui: Haleakala.[1]

430. Dimerogonus sharpi Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 330, pl. 11, fig. 22–27.[1]

Locality.— Hawaiian Islands: Maui: Haleakala.[1]

431. DIMEROGONUS SHIPLEYI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 332, pl. 11, fig. 28.[1]

LOCALITY.— Hawaiian Islands: Maui: Haleakala.[1]

432. DIMEROGONUS CARPENTERI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 332, pl. 11, fig. 29, 30.[1]

LOCALITY.— Hawaiian Islands: Lanai.[1]

433. DIMEROGONUS BEDDARDI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 333, pl. 11, fig. 31–33.[1]

LOCALITY.— Hawaiian Islands: Maui: Haleakala.[1]

434. DIMEROGONUS POCOCKI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 334, pl. 11, fig. 34, pl. 12, fig. 35–40.[1]

LOCALITY.— Hawaiian Islands: Molokai: Molokai Mts.[1]

435. DIMEROGONUS SEDGWICKI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 334, pl. 12, fig. 41–46.[1]

LOCALITY.— Hawaiian Islands: Oahu: Waianae Mts.[1]

436. DIMEROGONUS SINCLAIRI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 335, pl. 12, fig. 47–51.[1]

LOCALITY.— Hawaiian Islands: Maui: Haleakala.[1]

437. DIMEROGONUS LANKESTERI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 336, pl. 12, fig. 52.[1]

LOCALITY.— Hawaiian Islands: Kauai: Halemanu.[1]

438. DIMEROGONUS HARMERI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 336, pl. 12, fig. 53–56.[1]

LOCALITY.— Hawaiian Islands: Molokai.[1]

439. DIMEROGONUS PERKINSI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 337, pl. 12, fig. 57–12.[1]

LOCALITY.— Hawaiian Islands: Maui: Haleakala.[1]

440. DIMEROGONUS KOEBELEI Silvestri.

Fauna Hawaiiensis, 1904, **3**, p. 338, pl. 12, fig. 63–65.[1]

LOCALITY.— Hawaiian Islands: Maui: Haleakala.[1]

EUMASTIGONUS, gen. nov.

Differs from Dimerogonus in having the first legs of the male with strongly developed claws and otherwise also similar to the succeeding pairs. Third joint of legs not spined. Posterior gonopods two-jointed as in Dimerogonus. Anterior median plate well developed. Anterior piece of first gonopods at distal end with a finger-like inner process as in Dimerogonus and an outer lobe bearing a series of stout spines or pectinae or not.

GENOTYPE.— *E. kaorinus*, sp. nov.

441. EUMASTIGONUS KAORINUS, sp. nov.

TYPE.— M. C. Z. 4,867. PARATYPE.— M. C. Z. 4,868. New Zealand: Kaori Forest, near Swainson (W. M. Wheeler).

The anterior median plate of the male gonopods broad; anterior border broadly and deeply excavated; proximal end on each side extended out across base of gonopod. Distomesal process of anterior or coxal piece of first gonopods in ventral view a little enlarged distad, rounded, slender; membranous lobe broad; pectinate lobe below level of mesodistal process, the spines stout and blade-like, not reaching to level of tip of mesodistal process; telopodite with a series of setae across its distal end. Distal joint of posterior gonopods angled on mesal side near middle of length, distal portion slender and acutely pointed.

Eyes transversely narrowly elliptic, each composed of numerous ocelli in four or five long transverse series. Antennae short, scarcely widening distad, but each joint separately, strongly clavate. A sulcus across vertex; frontal region evenly convex, smooth and shining.

Cardo of mandibles of male strongly evenly extended caudad and ventrad.

Lower margin of collum rising in a straight and very oblique line from the somewhat rounded caudolateral corner to the level of the eye, making lower end of plate angular; margined from caudal angle to level of eye, with a second sulcus paralleling the margining one at a considerable distance from the margin.

Anal scutum exceeded by the valves, caudally rounded. Valves not margined.

Prozonites and anterior portion of metazonites dark, blackish above but down the sides becoming paler from the inclusion of numerous light areas; a light spot or aggregation of spots above pore on each side and a narrow light transverse stripe across dorsum just behind covered part of prozonite. Body banded with light rings, a light annulus embracing each metazonite excepting its anterior portion. Anal scutum almost solidly black; valves dusky over a paler background. Vertex of head covered with a network of dark lines over a light ground; a black area between eyes and antennae pointed below and enclosing a large, light, elliptic spot mesad of each antenna and a much smaller circular dot mesodorsad of each large one; lower part of face again light. Legs somewhat ferruginofulvous.

Number of segments, fifty to fifty-five.

Width (male), 2 mm.

442. EUMASTIGONUS FASCIATUS, sp. nov.

TYPE.— M. C. Z. 4,870. PARATYPES.— M. C. Z. 4,871. New Zealand: Taumarunni (W. M. Wheeler).

Readily distinguished from *E. kaorinus* in having a continuous narrow longitudinal stripe immediately above level of pores and embracing the latter in its lower border. The color-pattern otherwise similar, the anal scutum being black with the valves pale; head rather lighter but color-markings similar; legs and antennae fulvous; the light annuli of segments much more pronounced.

In the male gonopods the anterior median plate is very similar in form, but is proportionately longer and narrower. Coxal piece of anterior gonopods proportionately rather less elongate and less incurved on ectal side proximad of the ectodistal lobe; the latter bulging less laterad but extending decidedly farther distad and not pectinate, finger-shaped like the mesodistal lobe but less slender.

Number of segments, thirty-nine to forty-two as against fifty to fifty-five in *E. kaorinus*.

Width (female), to 2.2 mm.

443. EUMASTIGONUS DISTINCTIOR, sp. nov.

TYPE.— M. C. Z. 4,872. PARATYPE.— M. C. Z. 4,873. New Zealand: Day's Bay, near Wellington (W. M. Wheeler).

Very similar in coloration to *E. kaorinus* but the light markings more pronounced; a row of light spots along the lower part of each side.

Readily distinguished from the two other species in the character of the male gonopods. The anterior median plate is narrower than in either of the other species and at the distal end is straight or scarcely crenately notched, not deeply angularly excavated. The coxal piece of the anterior gonopods lacks the pectinae on the outer distal lobe as does *E. fasciatus;* but this ectal process is much longer, exceeding the inner process, distally rounded. The inner distal process differs in being curved strongly ectad, the tip slenderly acute and bending back mesad.

Anal valves more obviously margined; two short submarginal setae on each one.

Number of segments, forty-one to forty-nine.

Width (female), to 2.4 mm.

444. EUMASTIGONUS PARVUS, sp. nov.

TYPE.— M. C. Z. 4,874. PARATYPE.— M. C. Z. 4,875. New Zealand: Day's Bay, near Wellington (W. M. Wheeler).

Darker than the three preceding species and lacking distinct annulations of lighter color, the prozonites each in the caudal part of its overlapped portion with a narrow fulvous stripe across dorsum and a similar one down each side showing through the colorless overlapping zone of the preceding metazonite. Along each side of the body at the level of the pores a series of large light ferruginous spots and lower down toward the legs a series of smaller spots that fade out near middle of length. Collum, excepting marginally, vertex and lower part of head light ferruginous weakly darkened with a network of fine, largely obscure, dark lines. Anal scutum black, its basal border on each side and commonly the preceding metazonite light; anal valves either dusky ferruginous or nearly solid black.

Agrees with *E. kaorinus* and differs from *fasciatus* and *distinctior* in having a series of stout spines or pectinae at distoectal corner of coxal piece of the anterior gonopods. Unlike *E. kaorinus,* these pectinae not borne on a distinct shoulder or lobe, there being a small distoectal process apart from the pectinae; spines much smaller than in *kaorinus* and not exceeding the series of spines across apex of telopodite in size. The inner distal process distally rounded, only slightly curved. Clearly differing from *E. kaorinus* also in the form of the anterior median plate, this in the present species being distally rounded and mesally only vaguely indented, not deeply angularly excavated.

Number of segments, thirty-six to forty-two.

Diameter (male), 2.1 mm. Short.

445. EUMASTIGONUS MAIOR, sp. nov.

TYPE.— M. C. Z. 4,876. New Zealand: Day's Bay, near Wellington (W. M. Wheeler).

Having the usual pattern of coloration as exhibited in *E. kaorinus* and *distinctior.* The light annuli ferruginous except a narrow marginal stripe across dorsum which is fulvous. A series of small light spots just above the pores and below toward ventral surface a series of larger light spots with above each on prozonite a narrow vertical light stripe. Collum mostly ferruginous with vague network of dark lines; anterior border black, the black band widening toward middle where it is connected by two black lines with a triangular black caudal area embracing two light spots. Head with usual color-pattern. Anal scutum black, valves light. Preceding segment also light. Legs light ferruginous.

Most readily differentiated by means of the sculpturing of the tergites. On these the metazonites are closely longitudinally striate below, the striae on passing to the prozonite curving and running directly dorsad, the prozonites thus covered below with vertical, slightly wavy, and mostly continuous lines which on the anterior part are conspicuous up to the level of the pores. In the anterior region of the body the striae of the prozonites become more oblique and shorter.

Eyes rather small. Composed of only three transverse series of ocelli.

Collum smooth and shining. Narrowly margined below as usual. With a stria or sulcus nearly longitudinal, not paralleling the anterolateral margin as more usually the case; a short stria below it and one or two short ones above.

Anal valves not at all margined.

Number of segments, fifty-five.

Width (female), 3 mm.

EUETHOGONUS, gen. nov.

Differing from Amastigogonus Brölemann and Dimerogonus Attems in having the first pair of legs of the male armed with a distinct claw and the proximal joint not especially enlarged. In gonopods the characters are most like those of Amastigogonus. No distinct median plate; the tracheal stalks meeting directly at the middle line. Anterior gonopods with two long joints; a pseudoflagellum, this lying between these joints in a cavity which they form, rising to near the distal end of the gonopod but not protruding, slender and needle-like, not ribbon-shaped as it is in Amastigogonus. The posterior gonopods one-jointed as in the latter genus. Mandible with eight pectinate lamellae.

GENOTYPE.— *E. hardyi*, sp. nov.

446. EUETHOGONUS HARDYI, sp. nov.

TYPE.— M. C. Z. 4,817. PARATYPES.— M. C. Z. 4,818. Tasmania (G. H. Hardy).

General color black, in the anterior region the prozonites often paler, particularly down the sides, from the inclusion of numerous light dots. There is also a tendency for the caudal border of the metazonites to be lighter, especially in a stripe down each side. Legs ferruginous. Antennae blackish.

Sulcus across vertex of head distinct. Eyes transversely elongate, the mesal end angular, separated by less than twice their diameter. Ocelli in four transverse rows; *e. g.*, 9, 8, 7, 6. Setigerous foveolae eight. Antennae reaching to the fourth segment.

Collum moderately narrowed below, the anterior angle widely rounded. Margined below and up the anterior border to the level of the eye. Above the lower margining sulcus are two deep longitudinal sulci of which the upper one curves up dorsad at its anterior end.

The transverse suture of segments strongly marked throughout. Pore well removed caudad from the suture which remains straight or but slightly widely curved opposite it. The covered part of the prozonites densely marked with fine transverse striolations which are closely beaded with shining granules; these striolations also on the anterior part of the exposed region of the prozonites above, extending back farther on the sides; on lower part of prozonites some coarser striae arising obliquely or almost directly transversely from the anterior ends of longitudinal striae crossing the metazonites.

Anal scutum covering the valves above; smooth. Valves smooth and shining, not at all margined.

The posterior gonopods distinct from each other, with no median plate; undivided, each in the form of a plate with edges bent more or less caudad and so producing a caudal groove; from ectal edge arises a digitiform process as in *Amastigogonus tasmanianus* but lower down and not extending distad as far as the tip of the main branch; the latter distally with several long setae. In the anterior gonopods the inner ends of the tracheal stalks meet firmly, being sutured, at the mesal line, the ends there expanded and forming a broadly triangular plate. In front of this lies a very small piece apparently representing the true median plate which appears to be fused with the gonopods. The two branches of the anterior gonopods are equal in length and enclose between them a cavity in which the slender pseudoflagellum lies.

Number of segments, sixty-one and near that number.

Diameter of male, 3.2 mm.; of female to 4.2 mm.

447. ATELOMASTIX ALBANYENSIS Attems.

Fauna südw. Austr., 1911, **3**, p. 194, fig. 73–80.[1]

LOCALITY.— W. Australia: Albany.[1]

448. ATELOMASTIX NIGRESCENS Attems.

Fauna südw. Austr., 1911, **3**, p. 195, fig. 81–84.[1]

LOCALITY.— W. Australia: Jarrahdale, Lunenberg.[1]

449. SAMICHUS DECORATUS Attems.

Fauna südw. Austr., 1911, **3**, p. 198, fig. 85–91.[1]

LOCALITY.— W. Australia: Torbay.[1]

450. AMASTIGOGONUS TASMANIANUS Brölemann.

Records Austr. mus., 1913, **10**, p. 153, fig. 32–37.[1]

LOCALITY.— Tasmania.[1]

NESOCAMBALA, gen. nov.

Belonging to the group with flagellum-bearing gonopods (Mastigocambalinae). With five labral teeth as in Agastrophus and Hypocambala. Ocelli numerous and distinct. No vertigial setigerous foveolae. Antennae long, strongly clavate. Mandibles with six (or seven) pectinate lamellae. Segments deeply constricted as in Nannolene. Segments without striae or keels above, being essentially smooth; strongly striate beneath. Among other such genera of this group standing apart in having the repugnatorial pores begin on the fifth segment. First legs of male, excepting for smaller size, normal, six-jointed; with claws. In the anterior male gonopods a single median plate; a telopodite distinctly separated from the coxal division.

GENOTYPE.— *N. fijiana*, sp. nov.

451. NESOCAMBALA FIJIANA, sp. nov.

TYPE.— M. C. Z. 4,827. PARATYPES.— M. C. Z. 4,828. Fijis: Nadarivatu (W. M. Mann).

The anterior gonopods flattened anterocaudally; near middle on ectal side a distally directed, finger-like process curved mesad at its distal end, separated by a distinct suture; adjacent to it on the mesal side and separated off from the basal part by an oblique suture is a broader flattened piece which bends back caudad distally showing a furrow mesad of its ectal angle and a longer pointed process or finger from its mesodistal corner. Anterior ventral plate in a single piece which is extended distad as a slender, distally rounded process. The posterior gonopods much shorter than the anterior, the latter curving back over them; distally rounded; flagellum terminal.

The general color of the body black with the venter and lower part of sides fulvous, the light color rising higher on the metazonites than on the prozonites; frequently two longitudinal dorsal series of fulvous to somewhat ferruginous spots, the outline of the spots irregular, two on each metazonite with often a few much smaller light dots below each one. The collum lighter from numerous light areas separated by a network of dark as are also several succeeding tergites. Anal segment fulvous, the scutum darker over its caudal portion. Head fulvous below and on the sides, areolated over vertex similarly to collum and the clypeal region mottled. Antennae black excepting the seventh article. Legs fulvous.

Each eye-patch subrhomboidal. Ocelli mostly in four or five series; *e. g.*, 4, 4, 4, 4 to 4, 4, 4, 4, 3. A lightly impressed sulcus across vertex of head. Antennae with fifth and sixth articles thickest, the fifth strongly clavate, the sixth more nearly cylindrical.

Collum with lower margin evenly rounded, not extending as far ventrad as the second tergite. Margin separated off by a furrow below and up the anterior border toward the dorsum.

The ordinary segments deeply constricted, the metazonite, however, rising much higher than the prozonite. Pore located well caudad of the encircling furrow. Somites smooth above; longitudinally striate across both zones ventrally and a little distance up the sides. Metazonites normally clothed with numerous fine, suberect hairs.

Anal scutum long, rounded or nearly straight caudally, exceeded by the valves. Valves not margined.

Number of segments from forty-eight to fifty-eight.

Length (female), to 25 mm. Greatest width, up to 1.2 mm. The males smaller. Body constricted several segments caudad of head, then enlarging to behind middle and then again narrowing caudad.

452. NESOCAMBALA LINEATA, sp. nov.

TYPE.— M. C. Z. 4,829. PARATYPES.— M. C. Z. 4,830, 4,831, 4,832, 4,833. Fijis: Lasema, Waiyanitu, Vanua Ava, Lomati (W. M. Mann).

A smaller species than *N. fijiana* from which it may be distinguished at once in having a broad, fulvous to ferruginous stripe along the dorsum, a stripe along each side alone remaining black as the venter and lower part of the sides are light colored like the middorsal stripe. Anal segment black or mostly so. Legs irregularly dusky over a fulvous background. Antennae dark, the seventh article not abruptly paler, fulvous, as it is in *N. fijiana.*

Antennal articles shorter; the fifth more strongly constricted at base.

Collum more narrowed below, the lower end set off as a narrow rounded process. The segments constricted deeply as in the genotype. Both prozonites and metazonites subdensely clothed with hairs which are shorter and straighter than in the other species. Striae obscure.

Number of segments, forty-four to fifty-two.

Length (female), only to 14 mm.

453. NESOCAMBALA SCABRIUSCULA, sp. nov.

TYPE.— M. C. Z. 4,834. Fijis: Waiyanitu (W. M. Mann).

In size smaller than *N. fijiana,* being about the same as *lineata.* Superficially distinguishable from the other species in having a narrow light line along each side of the dorsum, this anteriorly in part breaking up into spots suggesting the arrangement in *N. fijiana;* these lines and the ventral surface and lower part of sides ferruginous. Anal segment light excepting the caudal portion of the tergite and the entire ventral scale which are black. Legs in part dusky over a fulvous background. The antennae similar, being thus obviously lighter than in *N. fijiana* and *lineata.*

The antennae are most nearly like those of *N. lineata*, the fifth joint, *e. g.*, being similarly short with strongly constricted base, above which the article expands abruptly.

A conspicuous characteristic of this species is in the rather finely and evenly but strongly roughened metazonites, especially dorsally, the coarser, low tuberculation or granulation here contrasting with the much finer grained even surface of the prozonites. Hairs numerous, short and straight.

Number of segments, fifty.

Length (female), 13 or 14 mm.

454. NESOCAMBALA SOLOMONICA, sp. nov.

TYPE.— M. C. Z. 4,955. PARATYPES.— M. C. Z. 4,956. Solomons: Wainoni Bay (W. M. Mann).

Resembling *N. fijiana;* but, aside from being an obviously more robust species, it differs in wholly lacking any series of light spots above and in showing a distinct annulation of the somites, the border of metazonite and the underlying part of prozonite being commonly light in contrast with the blackish remaining portion. Legs fulvous. Antennae dark.

Eyes subrhomboidal; ocelli in four or five oblique series, *e. g.*, 3, 4, 4, 4, 3. Fifth article of antennae strongly constricted at base, the sixth cylindrical. A sulcus across caudal portion of vertex, short but distinct.

Collum equalling or extending a little below lower edge of second tergite.

Segments constricted as usual, with metazonites higher than prozonites, but constriction not so sharp or deep as in *N. fijiana.* Striae rising part way up the side on a few anterior segments but on most confined to ventral surface and few though distinct, these crossing metazonite and curving dorsad on caudal edge of constriction but not crossing prozonite. Setae much shorter than in *N. fijiana.*

Anal tergite caudally rounded, much exceeded by the valves.

Number of segments, 50–55.

Diameter (female), to 2 mm.

455. NESOCAMBALA PERSONATA, sp. nov.

TYPE.— M. C. Z. 4,957. PARATYPES.— M. C. Z. 4,959. Solomons: Fulakora, Wainoni Bay (W. M. Mann).

A species with strongly marked color-character. The head and first four segments orange colored in sharp contrast with the remaining portion of body which is dark. Segments darkest in a stripe across metazonite in front of its paler caudal border, this stripe narrowing to an acute point down each side, a narrower dark process commonly also extending down prozonite; lower surface of segments pale. Anal tergite and valves and sometimes also the preceding segment light, typically orange like the anterior end. Antennae dark. Legs dusky over a light background.

Ocelli forming a compact black patch on each side, small, commonly in five series, *e. g.*, 4, 4, 4, 4, 3. Sixth article of antennae long, cylindrical to the abruptly narrower base; fifth article constricted proximally as usual.

Collum exceeded below by the second tergite.

Segments strongly constricted as usual, the constricting furrow flat at bottom and crossed longitudinally by numerous exceedingly fine, beaded impressed lines. Striate beneath and half way up each side, the striae crossing metazonite and on prozonite bending dorsad and uniting with succeeding stria in each case. A marked feature is the dense clothing of segments with fine short hairs.

Number of segments from forty-five (male) to fifty-nine (female).

Length (female), to about 20 mm.; width, 1.2 mm. Male more slender.

456. JULOMORPHA FLABELLIGERA Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 11, pl. 2, fig. 56–57.[1]

LOCALITY.— Queensland: Cayndah.[1]

457. JULOMORPHA PODENZANAE Silvestri.

Bull. Soc. ent. Ital., 1897, **29**, p. 227.[1]

LOCALITY.— Queensland: Cairns.[1]

458. JULOMORPHA PALLIPES Silvestri.

Bull. Soc. ent. Ital., 1897, **29**, p. 228.[1]

LOCALITY.— Queensland: Cairns.[1]

459. HYPOCAMBALA HELLERI Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 11, pl. 2, fig. 59–62.[1]

LOCALITY.— South Celebes: Bantimurung.[1]

460. AGASTROPHUS ORIENTALIS Carl.

Rev. Suisse zool., 1912, **20**, p. 156, fig. 13, 14.[1]

Agastrophus orientalis Attems, Bijdr. dierk., 1915, **20**, p. 8.[2]

LOCALITY.— Celebes: Masarang.[1] W. Ceram: Honitetu.[2]

461. TRICHOCAMBALA SOLLASI Pocock.

Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 325.[1]

LOCALITY.— Ellice Islands: Funafuti.[1]

462. PODYKIPUS COLLINUS Attems.

Fauna südw. Austr., 1911, **3**, p. 184, fig. 51–57.[1]

LOCALITIES.— W. Australia: Subiaca, East Fremantle, Gooseberry Hill.[1]

463. PODYKIPUS LEPTOIULOIDES Attems.

Fauna südw. Austr., 1911, **3**, p. 186, fig. 58–65.[1]

LOCALITIES.— W. Australia: Lion Mill, Mundaring Weir, Jarrahdale, Collie, Pickering Brook.[1]

464. DINOCAMBALA INGENS Attems.

Fauna südw. Austr., 1911, **3**, p. 190, fig. 66–72.[1]

LOCALITY.— W. Australia: Gooseberry Hill.[1]

TRACHYIULIDAE.

465. CAMBALOPSIS NORDQUISTI Attems.

Archiv zool., 1909, **5**, no. 3, p. 71, fig. xxi.[1]

Cambalopsis nordquisti Carl, Rev. Suisse zool., 1912, **20**, p. 158, pl. 51, fig. 19–21.

LOCALITY.— Celebes: Pare-Pare.[1]

SPIROSTREPTOIDEA.

HARPAGOPHORIDAE.

466. THYROPYGUS JAVANUS (Brandt).

Spirostreptus javanus Brandt, Recueil de mém., 1841, p. 92.
Thyropygus javanus Attems, Afrik. Spirostrept., 1914, p. 168.[1]

LOCALITIES.— Amboina, Tjikora, Taugeraug.[1]

467. RHYNCHOPROCTUS PROBOSCIDEUS Pocock.

Weber's Reise, 1894, **3**, p. 386, pl. 21, fig. 9.

Rhynchoproctus minor Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 2.[1]
Rhynchoproctus longipes Silvestri, *Op. cit.*, p. 2.[2]
Rhynchoproctus proboscideus Carl, Rev. Suisse zool., 1912, **20**, p. 159.[3]
Attems, Afrik. Spirostrept, 1914, p. 171.[4]

LOCALITIES.— Celebes: Barabatuwa, Kau, Maros, Duri, Ussu, Towuti Lake, Roembi-Mengkoka, Gulf of Boni, Takala Mts., Posso, Mapane, Buol,[3] Minahassa,[1] Patalung State.[4] Aru Islands.[2]

468. SPIROSTREPTUS (?) LEPTURUS Silvestri.

Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 4.[1]

LOCALITY.— Fijis: Viti.[1]

This and the following species listed under Spirostreptus cannot be placed in their proper genera or indeed in some cases in their orders from the published accounts.

469. SPIROSTREPTUS (?) STRIATUS Hutton.

Jules (*Spirostreptus*) *striatus* Hutton, Ann. mag. nat. hist., 1897, ser. 4, **20**, p. 115.[1]

LOCALITY.— New Zealand.[1]

470. SPIROSTREPTUS (?) MARITIMUS L. Koch.

Verh. Zool. bot. gesellsch., Wien, 1867, **17**, p. 244.[1]

LOCALITY.— Queensland: Brisbane.[1]

471. SPIROSTREPTUS (?) IMPRESSOPUNCTATUS L. Koch.

Verh. Zool. bot. gesellsch Wien, 1867, **17**, p. 243.[1]

LOCALITY.— Queensland: Brisbane.[1]

SPIROBOLOIDEA.

SPIROBOLIDAE.

472. RHINOCRICUS PERDITUS, sp. nov.

TYPE.— M. C. Z. 4,862. Queensland: Enoggera, near Brisbane (W. M. Wheeler).

The color of the body olive-black without annuli or other markings, or a narrow reddish annulus on caudal border of some segments. Legs and antennae bright ferruginous.

Labral pores 2+2. Eyes transversely subelliptic, twice the length or more apart. Sensory cones of antennae four in number.

Collum of usual general form. With numerous fine puncta and short fine impressed lines extending in various directions but those at extreme caudal border mostly longitudinal.

Second tergite extending much below the level of the collum.

Sutures of segments distinct below pores but above gradually fading out. Striae of metazonites ventrally as usual; those on prozonites beneath and laterally oblique, one at least forming a continuous transverse sulcus across dorsum from pore to pore in anterior region of body at least. Covered part of prozonite closely marked with fine wavy striolations as is frequent. Segments marked above with numerous puncta and short impressed lines which are weak and show only under magnification. Scobina present back to the thirty-first segment.

Anal scutum not equalling the valves. The latter moderately compressed at inner borders ectad of which they are roughened.

Feet of male with tarsal pads.

Number of segments, fifty-five.

Length (male), 62 mm.; width, 5.6 mm.

Recognizable among related Australian forms in the different characters of the male gonopods. The ventral branch of the posterior gonopods is long, curving back along the sternite of the segment to its caudal end, expanding clavately distad as usual in Rhinocricus, the distodorsal angle acute, the other rounded. Dorsal or lesser branch slender, scarcely surpassing the middle of the other branch.

473. CLADISOCRICUS FALCATUS (Silvestri).

Rhinocricus falcatus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 6, pl. 1, fig. 21, 22.[1]

LOCALITY.— Queensland: Gayndah.[1]

474. CLADISOCRICUS SCOBINULA Brölemann.

Dinematocricus (*Cladisocricus*) *falcatus scobinula* Brölemann, Records Austr. mus., 1913, **10**, p. 125, fig. 30, 31, pl. 16, fig. 39–44.[1]

LOCALITY.— Queensland: Gayndah.[1]

I am unable clearly to understand Brölemann's account as to the localities he attributes to typical *falcatus* and his subspecies *scobinula.* He states (*Op. cit.*, p. 125) that "the Gayndah specimens have been considered as a distinct subspecies for which the name of scobinula subsp. nov. is proposed" and on p. 128 that "There is, therefore, hardly any doubt that the Gayndah specimens belong to at least a subspecies different from the Cairns form." The pertinence of the reference to Cairns is not clear. He may have had typical *falcatus* from that locality, though Silvestri's types were from Gayndah.

475. CLADISOCRICUS (?) CONSIMILIS Brölemann.

Dinematocricus (?*Cladisocricus*) *consimilis* Brölemann, Records Austr. mus., 1913, **10**, p. 128, pl. 16, fig. 45.[1]

LOCALITY.— Queensland: Gayndah.[1]

476. SALPIDOBOLUS MEYERI (Silvestri).

Rhinocricus meyeri Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 8, pl. 1, fig. 40, 41.[1] Carl, Rev. Suisse zool., 1912, **20**, p. 172.[2]

LOCALITY.— Celebes: Boliohuto Mt.,[1] Buol,[2] North Celebes.[2] Made the type of Salpidobolus (Ann. Mus. civ. Genova, 1898, **38**) without diagnosis of the latter. Because of the remarkable processes on the anterior legs of the male it is tentatively kept apart from Dinematocricus with which it agrees in the male gonopods. If the two genera should be united Salpidobolus (1898) would have priority over Dinematocricus (1913).

477. PROPOROBOLUS BICORNIS (Silvestri).

Rhinocricus bicornis Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 5, pl. 1, fig. 17–19.[1]

LOCALITY.— Fiji: Viti.[1]

478. PROPOROBOLUS QUINTIPORUS (Attems).

Rhinocricus quintiporus Attens, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 524, pl. 22, fig. 19–21.[1]

LOCALITY.— Halmaheira.[1]

479. PROPOROBOLUS XANTHOPYGUS (Attems).

Rhinocricus xanthopygus Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 531, pl. 22, fig. 22, 23.[1]

LOCALITY.— Halmaheira.[1]

480. PROPOROBOLUS PACHYSKELES (Attems).

Rhinocricus pachyskeles Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 528.[1]

LOCALITY.— Batjan.[1]

481. PROPOROBOLUS SENNAE (Silvestri).

Rhinocricus sennae Silvestri, Bull. Soc. ent. Ital., 1897, **29**, p. 230, fig. 10–12.[1]

LOCALITY.— Queensland: Cairns.[1]

482. PROPOROBOLUS ADIPATUS (Karsch).

Spirobolus adipatus Karsch, Zeitsch. nat., 1881, **54**, p. 66.
Rhinocricus gravis Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 647.[1]
Rhinocricus adipatus Attems, Bijdr. dierk, 1915, **20**, p. 8, fig. 19–23.[2]

LOCALITIES.— Dutch New Guinea: Sorong, Andai.[1] Moluccas.[2]

483. PROPOROBOLUS BEAUFORTI (Attems).

Bijdr. dierk., 1915, **20**, p. 10, fig. 24–26.[1]

LOCALITY.— Waigeu: Beo.[1]

484. ACLADOCRICUS SOLOMONUS, sp. nov.

TYPE.— M. C. Z. 4,919. PARATYPES.— M. C. Z. 4,920. Solomons: Fulakora (W. M. Mann).

Deep blackish brown or black above level of pores with, in part, lighter caudal bands across somites, while below level of pores the color is a much lighter brown. Legs and antennae light brown to fulvous.

Sulcus of head not interrupted though a little finer in frontal region. Clypeal foveolae 2 + 2. Antennae very short.

Second tergite extending much below level of collum. Collum broadly rounded on each side below, a little straighter in male than in female; a fine longitudinal stria across anterior half at level of eye.

Somites above smooth and non-striate excepting covered part of prozonite which is marked with numerous wavy transverse striae. Suture single, not strongly marked but continuous entirely across dorsum.

Anal tergite a little exceeded by the valves. Mesal borders of valves broadly elevated, compressed.

The median plate of gonopods has the usual sublanceolate distal tongue which is distally acute, the proximal portion triangularly widening dorsad above the tongue, the sides above being somewhat convex though straight adjacent to the tongue. Distal joint of anterior gonopods long and slender, much surpassing the median piece, the coxal piece shorter than median piece and narrowing to an acute point distad. Style of posterior gonopods lying in space between two divisions of anterior gonopods, rising along mesal side of distal division and evenly curving caudad.

Number of segments, forty-five.

Length of male, near 52 mm.; width, 5.5 mm. Length of female, 62 mm.; width, 6.2 mm.

485. ACLADOCRICUS STYLIFERUS (Silvestri).

Rhinocricus styliferus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 5, pl. 1, fig. 11–13.[1]

LOCALITY.— Celebes: Minahassa.[1]

486. ACLADOCRICUS COGNATUS (Silvestri).

Rhinocricus cognatus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 6, pl. 1, fig. 23–24.[1]

LOCALITY.— Celebes: Minahassa.[1]

487. ACLADOCRICUS NEGLECTUS (Silvestri).

Rhinocricus neglectus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 6, pl. 1, fig. 25, 26.[1]

LOCALITY.— Celebes: Minahassa.[1]

488. ACLADOCRICUS FILOSUS (Silvestri).

Rhinocricus filosus Silvestri, Abhandl. Mus. Dresden, 1897, 6, pt. 9, p. 9, pl. 2, fig. 52, 53.[1]

LOCALITY.— South Celebes: Bantimurung.[1]

489. ACLADOCRICUS SETIGERUS (Silvestri).

Rhinocricus setigerus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 9, fig. viii, ix.[1]

LOCALITY.— Caroline Islands.[1]

490. ACLADOCRICUS MEDIOSTRIATUS (Silvestri).

Rhinocricus mediostriatus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 9, fig. x, xi.[1]

LOCALITY.— Sangi Island: Great Sangi.[1]

491. ACLADOCRICUS PYRRHOMOLA (Attems).

Rhinocricus pyrrhomola Attems, Abhandl. Senckenb, gesellsch., 1897, **23**, p. 527, pl. 24, 25.[1]

LOCALITY.— Celebes: Minahassa.[1]
This is the type of the genus.

492. ACLADOCRICUS MONTIVAGUS (Carl).

Rhinocricus montivagus Carl, Rev. Suisse zool., 1912, **20**, p. 174.[1]

LOCALITY.— Celebes: South Fall of Matiningkette.[1]

493. ACLADOCRICUS MACASSARENSIS (Carl).

Rhinocricus macassarensis Carl, Rev. Suisse zool., 1912, **20**, p. 198, fig. 35.[1]

LOCALITY.— Celebes: Makassar.[1]

494. DINEMATOCRICUS LUGUBRIS (L. Koch).

Spirobolus lugubris L. Koch, Verh. Zool. bot. gesellsch. Wien, 1865, **15**, p. 887.[1]

LOCALITY.— Australia.[1]

495. DINEMATOCRICUS COERULEOLIMBATUS (Daday).

Spirobolus coeruleolimbatus Daday, Term. fuz., 1891, **14**, p. 177, pl. 7, fig. 6, 7.[1]

LOCALITY.— Queensland.[1]

496. DINEMATOCRICUS FASCICULATUS (Voges).

Spirobolus fasciculatus Voges, Zeitsch. wiss. zool., 1878, **31**, p. 190.[1]

LOCALITY.— Australia.[1]

497. DINEMATOCRICUS BREVIPES (Karsch).

Rhinocricus brevipes Karsch, Zeitsch. nat., 1881, **54**, p. 76.[1]

LOCALITY.— Australia.[1]

498. DINEMATOCRICUS OPULENTUS (Silvestri).

Rhinocricus opulentus Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 650.[1]

LOCALITY.— Queensland: Somerset.[1]

499. DINEMATOCRICUS CREPIDATUS (Karsch).

Spirobolus (*Rhinocricus*) *crepidatus* Karsch, Zeits. nat., 1881, **54**, p. 74.[1]

LOCALITY.— Australia.[1]

500. DINEMATOCRICUS FENICHELI (Daday).

Spirobolus fenicheli Daday, Term. füz., 1893, **16**, p. 102, pl. 4, fig. 1–4.[1]
Rhinocricus fenicheli Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 648.[2]

LOCALITY.— New Guinea.[1, 2] Williams Land.[1]

501. DINEMATOCRICUS CAELATUS (Karsch).

Spirobolus caelatus Karsch, Zeitsch. nat., 1881, **34**, p. 67.[1]

LOCALITY.— New Guinea: Segaar Bay.[1] ?Bismarck Arch.: New Hanover.[1]

502. DINEMATOCRICUS DIVES (Silvestri).

Rhinocricus dives Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 649.[1]

LOCALITY.— Dutch New Guinea: Andai.[1]

503. DINEMATOCRICUS DIMISSUS (Silvestri).

Rhinocricus dimissus Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 652.[1]

LOCALITY.— Dutch New Guinea:[1] Manokwari (T. Barbour).

504. DINEMATOCRICUS DISJUNCTUS Brölemann.

Records Austr. mus., 1913, **10**, p. 134, pl. 17, fig. 53–57.[1]

LOCALITY.— New Guinea.[1]

505. DINEMATOCRICUS LORIAE (Silvestri).

Rhinocricus loriae Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 650.[1]

LOCALITY.— New Guinea: Haveri, Moroka.[1]

506. DINEMATOCRICUS VARIABILIS (Silvestri).

Rhinocricus variabilis Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 653.[1]

LOCALITY.— Aru Islands: Wokan.[1]

507. DINEMATOCRICUS ALBERTISI (Silvestri).

Rhinocricus albertisi Silvestri, Ann. Mus. civ. Genova, 1894, **34**, p. 652.[1]

LOCALITY.— New Guinea: Goram.[1]

508. Dinematocricus analis Brölemann.

Records Austr. mus., 1913, **10**, p. 131, pl. 17, fig. 49–52.[1]

Locality.— New Guinea.[1]

509. Dinematocricus faucium Brölemann.

Records Austr. mus., 1913, **10**, p. 129, pl. 16, fig. 46, pl. 17, fig. 47, 48.[1]

Locality.— New Guinea.[1]

510. Dinematocricus detornatus (Karsch).

Spirobolus detornatus Karsch, Zeitsch. nat., 1881, **54**, p. 57.[1]

Localities.— Fijis: Viti Levu.[1]

511. Dinematocricus vogesi (Karsch).

Spirobolus vogesi Karsch, Zeitsch. nat., 1881, **54**, p. 59.[1]

Locality.— New Hanover.[1]

512. Dinematocricus punctiplenus (Karsch).

Spirobolus punctiplenus Karsch, Zeitsch. nat., 1881, **54**, p. 61.[1]

Locality.— Banda.[1] Amboina.[1]
Also known from Sumatra.

513. Dinematocricus signifer (Karsch).

Spirobolus signifer Karsch, Zeitsch. nat., 1881, **54**, p. 61.[1]

Locality.— Fijis: Viti Levu.[1]

514. Dinematocricus decoratus (Karsch).

Spirobolus decoratus Karsch, Zeitsch. nat., 1881, **54**, p. 62.[1] Daday, Term. füz., 1891, **14**, p. 176.[2]

Locality.— Fijis: Viti Levu,[1] Fidschi.[2]

515. Dinematocricus undulatus (Karsch).

Spirobolus (*Rhinocricus*) *undulatus* Karsch, Zeitsch. nat., 1881, **54**, p. 69.[1]

Locality.— Fijis: Viti Levu.[1]

516. DINEMATOCRICUS CARINATUS (Karsch).

Spirobolus (*Rhinocricus*) *carinatus* Karsch, Zeitsch. nat., 1881, **54**, p. 73.[1]

LOCALITY.— Fijis: Viti Levu.[1]

517. DINEMATOCRICUS CALLOSUS (Karsch).

Spirobolus (*Rhinocricus*) *callosus* Karsch, Zeitsch. nat., 1881, **54**, p. 74.[1]

LOCALITY.— Pelew Islands.[1]

518. DINEMATOCRICUS SCROBICULATUS (Karsch).

Spirobolus (*Rhinocricus*) *scrobiculatus* Karsch, Zeitsch. nat. 1881, **54**, p. 75.[1]

LOCALITY.— Amboina.[1]

519. DINEMATOCRICUS BECCARII (Silvestri).

Rhinocricus beccarii Silvestri, Ann. Mus. civ. Genova, 1895, **34**, p. 651.[1]

LOCALITY.— Amboina.[1]

520. DINEMATOCRICUS COSTATUS (L. Koch).

Spirobolus costatus L. Koch, Verh. Zool. bot. gesellsch. Wien, 1865, **15**, p. 885.[1]
Daday, Term. füz., 1891, **14**, p. 176.[2]

LOCALITIES.— Fijis:[1] Viti Levu, Fidschi.[2]

521. DINEMATOCRICUS HOLOSERICEUS Brölemann.

Records Austr. mus., 1913, **10**, p. 139, pl. 18, fig. 65–69.[1]

LOCALITY.— Fiji.[1]

522. DINEMATOCRICUS COLUBRINUS (L. Koch).

Spirobolus colubrinus L. Koch, Verh. Zool. bot. gesellsch. Wien, 1865, **15**, p. 886.[1]

LOCALITY.— Fijis.[1]

523. DINEMATOCRICUS PICTUS (L. Koch).

Spirobolus pictus L. Koch, Verh. Zool. bot. gesellsch. Wien, 1865, **15**, p. 883.[1]

LOCALITY.— Fijis.[1]

524. DINEMATOCRICUS LANCEOLATUS Brölemann.

Results Austr. mus., 1913, **10**, p. 136, pl. 17, fig. 58, 59, pl. 18, fig. 60–64.[1]

LOCALITY.— New Ireland.[1]

525. DINEMATOCRICUS BIINCISUS (Pocock).

Rhinocricus biincisus Pocock, Willey's Zool. results, 1898, pt. 1, p. 71.[1]

LOCALITY.— New Britain.[1]

526. DINEMATOCRICUS GAZELLENSIS (Pocock).

Rhinocricus gazellensis Pocock, Willey's, Zool. results, 1898, pt. 1, p. 71.[1]

LOCALITY.— New Britain.[1]

527. DINEMATOCRICUS FLAVOCOLLARIS (Pocock).

Rhinocricus flavocollaris Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 140, pl. 9, f. 11, 11a.[1] Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 278.[2]

LOCALITIES.— Aru Islands:[1] Wammer Island, Dabo, Wangil.[2] Kei Islands: Kei-Dulah.[2]

528. DINEMATOCRICUS LEUCOPYGUS Carl.

Rhinocricus leucopygus Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 278, pl. 11, fig. 18.[1]

LOCALITIES.— Aru Islands: Wammer Island: Dabo.[1] Kei Islands: Great Kei: Elat.[1]

529. DINEMATOCRICUS (?) ANALAUCUS (Silvestri).

Rhinocricus analaucus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 4, pl. 1, fig. 10.[1]

LOCALITY.— South Celebes: Bantimurung.[1]

530. DINEMATOCRICUS MICROPYGUS (Silvestri).

Rhinocricus micropygus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 5, pl. 1, fig. 14–16.[1]

LOCALITY.— Fijis: Viti.[1]

531. DINEMATOCRICUS (?) EXCAVATUS (Silvestri).

Rhinocricus excavatus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 6, pl. 1, fig. 20.[1]

LOCALITY.— Fijis: Viti.[1]

Only the female known.

532. DINEMATOCRICUS ANOMALUS (Silvestri).

Rhinocricus anomalus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 7, pl. 1, fig. 27–30.[1]

LOCALITY.— Celebes: Minahassa.[1]

533. DINEMATOCRICUS OAPYGUS, nom. nov.

Rhinocricus xanthopygus Silvestri (non Attems), Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 6, pl. 1, fig. 20.[1]

LOCALITY.— Celebes: Minahassa.[1]

534. DINEMATOCRICUS (?) SUBMISSUS (Silvestri).

Rhinocricus submissus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 7, pl. 1, fig. 39.[1]

LOCALITY.— Aru Islands.[1]

Only the female known.

535. DINEMATOCRICUS (?) RUBROMARGINATUS (Silvestri).

Rhinocricus rubromarginatus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 8, pl. 1, figs. 38, 39.[1]

LOCALITY.— Aru Islands.[1]

536. DINEMATOCRICUS HETEROPUS (Silvestri).

Rhinocricus heteropus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 8, pl. 2, fig. 47–51.[1]

LOCALITY.— Celebes.[1]

537. DINEMATOCRICUS (?) HAASEI (Silvestri).

Rhinocricus haasei Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 10, fig. 12, 13.[1]

LOCALITY.— Celebes: Minahassa.[1]

Only the female known.

538. DINEMATOCRICUS (?) ELONGATUS (Silvestri).

Rhinocricus elongatus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 10, fig. 14.[1]

LOCALITY.— Celebes: Minahassa.[1]
Only the female known.

539. DINEMATOCRICUS COMPACTILIS (Attems).

Rhinocricus compactilis Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 523.[1]

LOCALITY.— Halmaheira.[1] Gani. Patani (Thomas Barbour).

540. DINEMATOCRICUS VIRGATUS (Attems).

Rhinocricus virgatus Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 526, pl. 22, fig. 27, 28.[1] Carl, Rev. Suisse zool., 1912, **20**, p. 174.[2]

LOCALITIES.— Celebes: Minahassa,[1] Tomohon, Ruruka, Dunogathal.[2]

541. DINEMATOCRICUS (?) JUCUNDUS (Attems).

Rhinocricus jucundus Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 529.[1]

LOCALITIES.— Ternate.[1] Celebes: Donggala.[1]
Mature male not yet known.

542. DINEMATOCRICUS (?) XYSTUS (Attems).

Rhinocricus xystus Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 530.[1]

LOCALITY.— Halmaheira. Patani.[1]
Male not known.

543. DINEMATOCRICUS (?) LAMPROMERUS (Attems).

Rhinocricus lampromerus Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 532.[1]

LOCALITY.— Halmaheira.[1]

544. DINEMATOCRICUS CENTRALIS (Carl).

Rhinocricus centralis Carl, Rev. Suisse zool., 1912, **20**, p. 176, fig. 17.[1]

LOCALITY.— Celebes: Matanna Lake, Ussu, Gulf of Boni.[1]

544a. DINEMATOCRICUS CENTRALIS var. SPECTABILIS Carl.

Rhinocricus centralis var. *spectabilis* Carl, Rev. Suisse zool., 1912, **20**, p. 178.[1]

LOCALITY.— Celebes: Roembi-Mengkoka.[1]

544b. DINEMATOCRICUS CENTRALIS var. MINOR (Carl).

Rhinocricus centralis var. *minor* Carl, Rev. Suisse zool., 1912, **20**, p. 179.[1]

LOCALITY.— Celebes: Ussu.[1]

545. DINEMATOCRICUS PENINSULARIS (Carl).

Rhinocricus peninsularis Carl, Rev. Suisse zool., 1912, **20**, p. 179, fig. 18.[1]

LOCALITY.— Celebes: Roembi-Mengkoka.[1]

545a. DINEMATOCRICUS PENINSULARIS var. EXPULSUS (Carl).

Rhinocricus peninsularis var. *expulsus* Carl, Rev. Suisse zool., 1912, **20**, p. 181.[1]

LOCALITY.— Kabaena Island, near Celebes.[1]

546. DINEMATOCRICUS FULVOTAENIATUS (Carl).

Rhinocricus fulvotaeniatus Carl, Rev. Suisse zool., 1912, **20**, p. 181, fig. 19–21.[1]

LOCALITY.— Celebes: Manipi.[1]

547. DINEMATOCRICUS LATERALIS (Carl).

Rhinocricus lateralis Carl, Rev. Suisse zool., 1912, **20**, p. 183, fig. 22.[1]

LOCALITY.— Celebes: Boeton.[1]

547a. DINEMATOCRICUS LATERALIS var. ATRATUS (Carl).

Rhinocricus lateralis var. *atratus* Carl, Rev. Suisse zool., 1912, **20**, p. 185.[1]

LOCALITY.— Celebes: Roembi-Mengkoka.[1]

548. DINEMATOCRICUS MOENENSIS (Carl).

Rhinocricus moenensis Carl, Rev. Suisse zool., 1912, **20**, p. 185.[1]

LOCALITY.— Celebes: Moena Island.[1]

549. DINEMATOCRICUS RIPARIENSIS (Carl).

Rhinocricus ripariensis Carl, Rev. Suisse zool., 1912, **20**, p. 186, fig. 23.[1]

LOCALITY.— Celebes: Posso Lake, Mapane.[1]

550. DINEMATOCRICUS GORONTALENSIS (Carl).

Rhinocricus gorontalensis Carl, Rev. Suisse zool., 1912, **20**, p. 188, fig. 24.[1]

LOCALITY.— Celebes: Gorontalo.[1]

551. DINEMATOCRICUS ANNULIPES (Carl).

Rhinocricus annulipes Carl, Rev. Suisse zool., 1912, **20**, p. 189, fig. 25–27.[1]

LOCALITY.— Celebes: Buol.[1]

552. DINEMATOCRICUS (?) MULTISTRIATUS (Carl).

Rhinocricus multistriatus Carl, Rev. Suisse zool., 1912, **20**, p. 192.[1]

LOCALITY.— Celebes: Buol.[1]
Only the female known.

553. DINEMATOCRICUS TRANSVERSEZONATUS (Carl).

Rhinocricus transversezonatus Carl, Rev. Suisse zool., 1912, **20**, p. 193, fig. 28–31.[1]

LOCALITY.— Celebes: Mapane, Gulf of Tomini.[1]

554. DINEMATOCRICUS PTHISCUS Carl.

Rhinocricus pthiscus Carl, Rev. Suisse zool., 1912, **20**, p. 196, fig. 33, 34.[1]

LOCALITY.— Celebes: Donggala on Palos Bay.[1]

555. DINEMATOCRICUS WEBERI (Pocock).

Rhinocricus weberi Pocock, Weber's Reise, 1894, **3**, p. 391, pl. 22, fig. 22–22c.[1]

LOCALITY.— Celebes: Luwu.[1]

556. DINEMATOCRICUS SEMICINCTUS (Pocock).

Rhinocricus semicinctus Pocock, Weber's Reise, 1894, **3**, p. 392, pl. 22, fig. 23.[1]

LOCALITY.— Flores: Bari.[1]

557. DINEMATOCRICUS XANTHOZONUS (Pocock).

Rhinocricus xanthozonus Pocock, Weber's Reise, 1894, **3**, p. 393, pl. 22, fig. 24.[1]

LOCALITY.— Flores: Maumerie.[1]

558. RHINOCRICUS BRACHYPROCTUS (Pocock).

Rhinocricus brachyproctus Pocock, Weber's Reise, 1894, **3**, p. 393, pl. 22, fig. 25.[1]

LOCALITY.— Saleyer Island.[1]

559.— DINEMATOCRICUS EUMELANUS (Pocock).

Rhinocricus eumelanus Pocock, Weber's Reise, 1894, **3**, p. 394, pl. 22, fig. 26.[1]

LOCALITY.— Celebes: Bira.[1]

560.— DINEMATOCRICUS HICKSONI (Pocock).

Rhinocricus hicksoni Pocock, Weber's Reise, 1894, **3**, p. 394.[1]

LOCALITY.— Celebes.[1]

561. DINEMATOCRICUS GRANTI (Hirst).

Rhinocricus granti Hirst, Trans. Zool. soc. London, 1914, **20**, p. 331, fig. 18, a, b.[1]

LOCALITY.— Dutch New Guinea: Mimika River.[1]

562. DINEMATOCRICUS CHALLENGERI (Pocock).

Spirobolus challengeri Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11**, p. 139, pl. 9, fig. 10–10c.[1]
Rhinocricus rubro-maculatus Silvestri, Abhandl. Mus. Dresden, 1897, **6**, pt. 9, p. 7, pl. 1, fig. 33–36.[2]
Rhinocricus challengeri Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 278.[3]

LOCALITIES.— Aru Islands.[2] Kei Islands: Kei-Dulah.[1, 3]

563. DINEMATOCRICUS CINCTIPES (Butler).

Spirobolus cinctipes Butler, Proc. Zool. soc. London, 1877, p. 283.[1]

LOCALITY.— Union Islands: Atafu (Duke of York Island.)[1]

564. DINEMATOCRICUS FURCATUS (Silvestri).

Rhinocricus fuscatus Silvestri, Term. füz., 1899, **22**, p. 209, pl. 12, fig. 27–29.[1]

LOCALITY.— New Guinea: Astrolabe Bay, Erima.[1]

565. DINEMATOCRICUS PHILISTIUS Attems.

Bijdr. dierk, 1915, **20**, p. 11, fig. 19–21.[1]

LOCALITY.— Dutch New Guinea. Waigeu. Ceram: Honitetu.[1]

566. DINEMATOCRICUS (?) DOREYANUS (Gervais).

Spirobolus doreyanus Gervais, Insect. Apt., 1847, **4**, p. 174.[1]

LOCALITY.— New Guinea.[1]

567. DINEMATOCRICUS SINUATULUS, sp. nov.

TYPE.— M. C. Z. 4,801. PARATYPES.— M. C. Z. 4,802. Queensland: Cooktown (A. G. Mayer).

Black, the segments caudally narrowly bordered with ferruginous. Legs and antennae pale ferruginous.

Sulcus of head widely interrupted in the frontal region. Setigerous foveolae 2 + 2. Antennae short.

Collum well rounded below. Margination in front obscure or absent. Second tergite extending well below collum, not flattened or excavated.

Anal scutum covering the valves above, the latter protruding a little beyond it. Valves a little compressed; no margining sulcus.

Branches of telopodite of posterior gonopods slender as usual but the outer or principal one slightly clavate and truncate at tip; the inner branch much the more slender and shorter, straight, acute, well apart from the other. Basal part of median plate between triangular and semicircular in form, the base line reentrant at middle; distal process about equal in length to basal part, slightly spatulate in form.

Number of segments, forty-two to forty-eight.

Diameter of female, up to 5.5 mm.; of male, up to 3.7 mm. Length of male type, 30 mm.

Distinguished from other known Australian species in having the posterior margins of segments sinuate above the scobina as in various Fijian species, leaving the scobina in some cases freely exposed. Scobina occurring back to the thirty-first segment. Prozonites somewhat depressed. Sutures on most segments obscure dorsally. Exposed part of prozonites smooth excepting for sparse, exceedingly fine and weak puncta and short lines; covered part with wavy fine transverse lines. Metazonites smooth.

568. DINEMATOCRICUS EXUL, sp. nov.

TYPE.— M. C. Z. 4,732. PARATYPES.— M. C. Z. 4,733. New Guinea: Djamna (Thomas Barbour).

The general color is deep shining black, often somewhat olivaceous; the covered portion of segments brown with the border more reddish; caudal border red with the extreme margin fulvous. Legs greenish.

Sulcus of head widely interrupted in the frontal region. Foveolae 2 + 2. Antennae not surpassing the second segment.

Collum margined below and in front below level of eyes as usual, failing much of reaching lower level of second tergite.

Covered portion of segments densely finely striate, the striae short, transverse, curving and in some degree anastomosing. Surface above elsewhere smooth and highly polished. Transverse suture or sulcus not present, obscurely indicated in a shallow furrow below. Segments striate beneath and on front region of ring higher up toward the pore. Caudal margins of some of the segments vaguely bisinuate.

Anal scutum surpassing the valves. The latter compressed but margins not sharply set off.

In the gonopods of the male the median plate has the basal region sublunate in form and longer than the distal process, the latter narrowly subtriangular, rounded at the distal end. Prongs of the telopodite of posterior gonopods subequal.

Length, to near 80 mm.; width, 7.6 mm.

A small species readily distinguished in having the anal tergite surpassing the valves, the scobina extending to the thirty fifth segment, and the number of segments only forty-two to forty-four.

569. DINEMATOCRICUS FRATRELLUS, sp. nov.

TYPE.— M. C. Z. 4,762. New Guinea: Manokwari (Thomas Barbour).

Black, with the covered zone of segments more or less testaceous to ferruginous. Legs dark brown.

Sulcus continuous excepting for a short distance in the frontal region. Foveolae 2 + 2.

Second tergite extending much below the collum. Surface of the latter with fine short lines branching in coriarious fashion.

Prozonites of most other segments also with some fine coriarious markings, the metazonites mostly wholly smooth. Suture distinct below but in middle and posterior region obscure in middorsal region. Posterior margins of most segments bisinuate, though not strongly so, over the scobina. Scobina long, occurring back as far as the thirty seventh segment.

Anal segment with coriarious markings. Valves exceeding the tergite; inner borders compressed. In having the valves exceeding the tergite readily distinguished from *D. exul* which the species much resembles in general features; it is a considerably smaller species.

Number of segments forty-eight as against only forty-two to forty-four in *D. exul*.

Length about 52 mm.; width, 5.4 mm.

570. DINEMATOCRICUS FRANGENS, sp. nov.

TYPE.— M. C. Z. 4,746. PARATYPE.— M. C. Z. 4,747. Ceram: Wahaai (Thomas Barbour).

The general color is fuscous with the posterior borders of the segments rufescent. Legs and antennae brown to ferruginous. Head typically blackish with clypeal region and an area in frontal region ferruginous.

Sulcus of head widely interrupted in the frontal region. Setigerous foveolae 2 + 2. Antennae very short.

Collum rounded and margined below in the usual manner. The second tergite extending well below it, not excavated.

The surface of anterior segments, like that of the collum, with numerous exceedingly fine impressed points from which obscure fine lines in places may be traced. In the middle and posterior regions the surface without such impressions, smooth and shining. Covered part of prozonite not striate in general. Segments broadly and shallowly depressed about the middle. Segmental sulcus obscure or mostly wholly absent across the dorsum. Segments deeply striate beneath and up to near the pore; in several of the anterior segments, including the sixth or first porigerous, one or more of the uppermost striae curve transversely across the dorsum forming one or two complete deep sulci in front of the ordinary one. Scobina extending to the forty second segment; each consisting of a deeply impressed lunate area followed by the usual series of fine striae.

Caudal part of the anal tergite set off by a sharply impressed transverse sulcus. Caudal angle subacute, not surpassing the valves. Valves with inner borders compressed and elevated; not angled above.

Number of segments fifty-two or fifty-three.

Length (female), near 78 mm.; width, 7 mm.

A species like *D. undulatus* and several other species in having the posterior margins of some of the anterior segments undulate over the scobina of the succeeding segment.

571. DINEMATOCRICUS AMPHELICTOGON, sp. nov.

TYPE.— M. C. Z. 4,716. PARATYPES.— M. C. Z. 4,717. Fijis: Nadarivatu (W. M. Mann).

The color of the dorsum above the pores is nearly black, uniform, excepting the head, collum, and succeeding five tergites which are light brown or olive cast, these tergites being bordered posteriorly with dark. The other segments below the level of the pores also light olive with posterior border dark like dorsum but of a somewhat more brownish cast. Legs dense shining brown. Anal scutum blackish, uniform; valves similar but in the middle region dark olivaceous.

Sulcus of head complete. Below level of antennae on each side a series of oblique striae, the striae of upper region fewer and much weaker. Surface in general shining.

Collum of usual form, much exceeded below by the second tergite which is not excavated. The plate is margined only below, the margining sulcus not at all extending about the anterior corner. Surface very finely punctate among the coriarious markings.

Fourth, fifth, and sixth plates with two transverse sulci; on the following segments only the usual transverse sulcus, this lying in a shallow transverse depression or weak constriction and distinct across the dorsum throughout. Surface of second plate similar to that of collum but in following plates the striae become more and more restricted to a longitudinal direction, soon forming a dense series giving the characteristic silky lustre as in *D. sericoides* and related forms. Scobina from eighth segment to the thirty ninth or fortieth; each a deep lunate impression within some finer lines in front of this.

Angle of anal scutum very obtuse, rounded. Surface densely finely punctate, not striate, shining; from each lateral margin behind a series of furrows running mesad. Valves compressed; surface densely finely punctate, shining.

Number of segments, fifty-five to fifty-eight.

Length (male), near 105 mm.; width, 11 mm.

This species may be distinguished from the related Fijian forms having a similar characteristic silky lustre by the different form of the male gonopods. The telopodite of the posterior pair has the inner branch slender and finely pointed as in these other species, the tip not extending beyond the middle of the length of the outer branch; the latter is characterized by being bent or coiled into two complete circles, one lying within or immediately over the other.

572. DINEMATOCRICUS SERICOIDES, sp. nov.

TYPE.— M. C. Z. 4,710. PARATYPES.— M. C. Z. 4,711. Fijis: Suva (A. G. Mayer).

General color fuscous to olive-black, the covered part of prozonites commonly in some degree lighter; below level of pores there is typically a dull ferruginous to a somewhat light olive-brown stripe over the caudal border. Legs fuscous to ferruginous. Anal scutum and valves olive-black without lighter markings.

Sulcus of head fine and complete, though fainter near level of antennae, where crossed by several striae angled on the sulcus. Surface in general smooth and shining.

Collum laterally well rounded; failing much of reaching the lower edge of the second tergite which is not at all excavated below. Surface appearing smooth and shining, very finely coriariously striate, the striae coarser below on each side.

Second, third, and fourth tergites with dorsum crossed by a transverse stria; on the fifth tergite a weak anterior transverse stria and a deeper sulcus near middle but curving farther forward on each side with behind it on each side a shorter vertical stria paralleling it. On the sixth (first porigerous) tergite two complete deep transverse sulci, the ordinary segmental one which is strongly curved behind the pore and one in front of this beginning a little above the level of the pore. On the sixth tergite the anterior sulcus is weaker and on the seventh absent. Caudally the other sulcus becomes weaker and weaker above to very obscure and finally quite absent. Covered part of tergites coriariously striate, the striae chiefly subvertical; elsewhere the surface is very densely marked with fine longitudinal sulci which give a silky lustre as in *D. holosericeus*. Scobina from the eighth to the thirty fifth segment; each a deep lunate impression with fine striae behind it.

Anal scutum short, the posterior angle very obtuse, not free, exceeded by the valves, surface shining, less dull and silky appearing than the other tergites but similarly crossed by numerous longitudinal striae which, however, are coarser and less regular. Valves but slightly compressed, smooth, and shining, without striae excepting a series of weak ones across upper border.

Number of segments forty-seven to fifty-one.

Length (female), 82 mm.; width, 8.5 mm. The males proportionately somewhat stouter, a specimen 78 mm. long having a width of 9 mm.

Evidently close to *D. holosericeus* Brölemann, but readily distinguished by the form of the gonopods. In these the distal lobe of the median plate is proportionately somewhat longer, more angular at apex and narrower across base; the distal piece of the posterior gonopods has the inner branch even smaller than in *D. holosericeus* but the most pronounced difference is in the outer branch which bends strongly first toward the body, then ectad and then at tip curves back in a hook.

573. DINEMATOCRICUS PERMUNDUS, sp. nov.

TYPE.— M. C. Z. 4,729. PARATYPES.— M. C. Z. 4,730. New Guinea: Manokwari (Thomas Barbour).

Color a deep shining olive to black. Posterior margins of segments rufescent, the collum also in front as well. Head like the body, or in clypeal and labral region tinged with rufous. The legs are dark brown, with the distal joints in some degree paler, sometimes fulvoferruginous.

Sulcus of head complete. Foveolae 2 + 2. Below with three large rounded teeth of which the median is largest. Antennae not exceeding the second segment.

Collum not reaching level of second tergite, the latter not excavated below. Lower margin rounded, margined below and in front up to level of eye.

Surface of segments in general smooth and highly polished. Covered anterior region of segments densely transversely striate. Exposed region striate only beneath as in *D. dives*. Transverse suture or sulcus fine below level of pore, extending on most but part way up dorsum, not evident in the middorsal region. Scobina present on segments eleven to nineteen inclusive.

Anal tergite furrowed transversely in front of triangular caudal region, the latter caudally rounded. Valves much exceeding the tergite; characteristically angled above behind tip of the tergite; mesal borders very strongly compressed.

Number of segments forty-eight to fifty.

Length (female), up to about 175 mm.; width, to 17 mm.

Apparently close to *D. dives* (Silvestri) though lack of the male prevents full comparison.

574. DINEMATOCRICUS LABASANUS, sp. nov.

TYPE.— M. C. Z. 4,721. PARATYPES.— M. C. Z. 4,722. Fijis: Labasa (W. M. Mann).

General color above shining black; sometimes of a vague purplish tinge, commonly on the sides below the pores. Legs and antennae dark of a distinct purplish cast.

The sulcus of the head is complete. Foveolae 2 + 2. Surface smooth and shining, marked, however, with the usual oblique striae which are fine.

Collum well rounded below. Margined below and along the anterior corner in front. Surface very finely coriarious. Ending well above lower edge of the second tergite.

Other tergites in general smooth and shining, the covered part of each ring with fine oblique striae. Suture in anterior segments distinct entirely across plate but caudally becoming weaker and often obscure above the pores, the suture always single.

Anal scutum mesally rounded caudally; surface smooth and shining or in part with fine, not dense, granules; much exceeded by the valves. Valves strongly compressed, their surface appearing smooth and shining but in part covered sparsely with fine weak granules visible only under good magnification.

Number of segments fifty-eight to sixty-three.

Length (male), about 165 mm.; width, 12.5 mm.

Related to *D. micropygus* (Silvestri), but a larger species differing in having the two branches of the telopodite very unequal in length, the inner branch extending a little beyond the middle of the outer one, and also in having the process of the median plate more lanceolate, and the margin of the basal part more evenly curved. Also the scobina extend caudad only to the twenty third somite instead of to the thirty second.

575. DINEMATOCRICUS BIONUS, sp. nov.

TYPE.— M. C. Z. 4,727. Solomons: Bio (W. M. Mann).

Color olive-brown. Legs deeper, somewhat purplish brown of olive cast.

Sulcus of head interrupted near middle, elsewhere sharply impressed. Foveolae 2 + 2. Incision in lower margin with a wide dentate plate showing four rounded teeth or crenations of which the two middle ones are less deeply separated. Surface above with coriarious markings, the transverse striae below much as usual.

Collum narrowly rounded below, not reaching lower level of second tergite. Margined below and up the anterior side of the corner. Surface closely but finely coriarious.

Surface of other segments finely loosely coriarious with numerous very fine puncta intermingled, the striae weak especially in the posterior region and running chiefly in the longitudinal direction. Suture traceable across dorsum on all segments but more distinct in anterior region. Transverse striae well marked below level of pore, then more oblique; on the fifth and sixth segments a transverse sulcus in front of the suture which is much deeper than the latter, a similar sulcus also on the second, third, and fourth segments but the ordinary suture obsolete on these segments. Scobina transversely elongate, separated from each other by only their own width; each a deep lunate concave impression followed by a finely striate area of a low triangular form; present on segments from the eighth to the twenty eighth inclusive.

Anal scutum and valves with surface like that of preceding segments. Valves protruding but border not set off by concave impression.

Number of segments, sixty.

Length (female), near 145 mm.; width, 11.5 mm.

576. DINEMATOCRICUS OBVIUS, sp. nov.

TYPE.— M. C. Z. 4,725. PARATYPES.— M. C. Z. 4,726. Solomons: Maru Bay, San Cristobal (W. M. Mann).

General color olive, the anal scutum and valves sometimes lighter, more brownish. Legs also olive.

Sulcus on head discontinuous near middle and again toward the labral region. Foveolae 2 + 2. Median incision in lower margin wide, the tooth correspondingly broad, distally truncate or rather slightly concave.

Collum margined below and more weakly about the anterior corner in front, with a fine longitudinal sulcus or stria, as is frequent, at level of eye on each side, joined above by two short transverse ones. Surface coriarious, the markings coarser below. Not reaching lower level of the second tergite.

Surface of other tergites in general marked with numerous exceedingly fine puncta which caudad on each segment tend to give rise to exceedingly short, fine, longitudinal striae. Below level of pore with numerous longitudinal striae forming an obtuse angle at the suture, a few more widely separated ones also above level of the pore. Suture fine, extending up to level of pore about which it bends but obsolete above this level. On the more anterior segments, however, the suture is distinct entirely across the dorsum and in front of it on each side one or more of the striae above the level of the pore curve transversely and are elongate, on the fifth, sixth, seventh, and eighth segments forming a complete secondary sulcus in front of the ordinary one. Scobina small and short, lunate pits occurring on segments from the tenth or eleventh to the twenty fifth.

Anal valves exceeding the tergite, protruding, but mesal borders scarcely set off by compression. Surface of valves and tergite with numerous exceedingly fine points as in other segments but otherwise smooth.

Number of segments, sixty to sixty-two.

Length (female), near 150 mm.; width, 13.5 mm. A second female has a width of 15 mm.

The species may be readily distinguished by the structure of the gonopods. In these the median piece has the basal part transversely oblong with the anterior margin convex; the distal part exceeds the basal in length, and is constricted at base, above which it is oblong-lanceolate in form. The telopodites of the posterior pair are very long and cross each other in the middle line; the outer piece is especially long and evenly curved, becoming very fine distad; the inner branch is very short and slender in comparison with the other, lying much below the middle of it.

577. DINEMATOCRICUS PELLOTROPIS, sp. nov.

TYPE.— M. C. Z. 4,953. Fijis: Mt. Victoria (W. M. Mann).

General ground color fulvous of a vague greenish cast on sides and above often showing a weak ferruginous tinge; surface of keels black, the color of the two sides often nearly uniting along caudal edge of plate, often ending abruptly at prozonite or else extending a varying distance upon the latter and spreading or not, commonly a spot in middorsal region; on first several somites behind collum the dorsum of tergite solid black, the black farther caudad enclosing more and more of yellow. Anal valves black as also the tergite excepting distal angulate portion which is fulvous. Anal scale fulvous. Collum black with anterior border pale; head covered with a dense dark network which to naked eye appears solid, the labrum fulvous. Legs fulvous. Antennae dark, especially distally.

Sulcus of head nearly complete, only narrowly interrupted in frontal region. Foveolae 2 + 2. Antennae extending to third segment.

Segmental suture not clearly defined, the keels present on metazonite above continuing upon prozonite without complete interruption though not so uniformly as in *D. decipiens*. The keels are low but narrower and more sharply defined than in *D. decipiens;* not present as such below pores, though the flat region between the striae are similarly dark colored as in the dorsal region, the stripes wider; usually thirteen keels on dorsum of each segment between pores. Posterior margins of somites not sinuate. Scobina much narrower than in *D. eutropis*, ceasing at somite XVI.

Number of segments, thirty-five.

Length (female type), 41 mm.; width, 5 mm.

578. DINEMATOCRICUS EUTROPIS, sp. nov.

TYPE.— M. C. Z. 4,929. Fijis: Nagasu (W. M. Mann).

Prozonites a pale, somewhat greyish olive; metazonites abruptly a much darker color, deep brown. Legs fulvous, paler distally. Anal valves and anal tergite olive, the latter narrowly bordered with pale. Collum olive, narrowly bordered with brown.

Sulcus of head distinct and complete. Antennae short, not extending beyond collum. Foveolae 2 + 2.

Second tergite extending much below level of collum. Sutures of segments clearly and uniformly impressed. Pore in line with suture which bends sharply about its posterior portion. Metazonites entirely across dorsum and down sides below pores as well with numerous sharply elevated, rather thin, keels which end abruptly in front at the median suture; below middle the keels decrease in height becoming finally merely the sharply defined lower edges of the strongly impressed striae; usually about twenty-five keels on dorsal region between pores. Between the median and anterior suture are somewhat oblique longitudinal sulci each with one edge elevated into a narrow low keel these keels more numerous and much more weakly developed than those of the metazonite, being obvious only under the microscope. Posterior edges of segments not sinuate. Scobina large, very wide, extending to somite XXV.

Anal tergite obtusely angular above, much exceeded by the valves, the mesal borders of which are elevated and strongly compressed.

Number of segments, thirty-eight.

Length (female), near 50 mm.; width, 5 mm.

579. DINEMATOCRICUS DECIPIENS, sp. nov.

TYPE.— M. C. Z. 4,753. PARATYPES.— M. C. Z. 4,754. Fijis: Waiyanitu (W. M. Mann).

The sides are black in color without lighter markings. The dorsum between the pores is of a lighter shade, typically dusky over a fulvous background or in part with a somewhat reddish tinge, crossed longitudinally with black lines along the sulci; beginning near the middle of the length there is a brighter fulvous median dorsal longitudinal stripe which is narrowly pointed anteriorly and regularly widens caudad to the last scutum, the same band sometimes represented farther cephalad by a series of disconnected light dots where there may also be a more lateral series of similar dots on each side. The anal segment as a whole fulvous to ferruginous. Legs bright yellow to pale ferruginous.

The sulcus of the head is sharply impressed throughout its length. Foveolae 2 + 2.

Collum well rounded below, margined as usual, the margining sulcus weak. Not attaining lower level of second tergite.

The segments in general are strongly striate beneath and up the sides to the pore-level, with the covered part of the zonite smooth throughout. Above the level of the pore the dorsum is deeply longitudinally furrowed from the caudal margin forward to the anterior smooth covered zone, leaving between them broad rounded costae or keels. The number of these costae is mostly fifteen of which the middorsal one is ordinarily much wider than the others. Scobina extending to the twenty seventh segment.

The caudal plate does not cover the anal valves above, the latter protruding prominently.

Number of segments, thirty-six or thirty-seven.

Length of female, about 45 mm.; width, 4.6 mm.; depth, 5 mm. Length of male, 19 mm.; width, 3 mm.

This species is very close in its general appearance and structure to *D. carinatus* (Karsch). It may be distinguished at once in having the posterior margins of some of the segments distinctly sinuate above the scobina, the median region bulging convexly, and the costae or keels, which are low or flat, extending on the prozonites to the anterior region as well as across the metazonites. In the gonopods of the male the process of the median piece is narrower, more linear or but little spatulate in shape and is much longer in proportion to the basal piece which it exceeds in length. In the telopodite of the posterior gonopods the branches are very unequal, the exterior one the longer, weakly doubly curved, with the tip slightly expanded and blunt and bent; the lesser branch more slender, extending well beyond the middle of the principal one, pointed at tip.

580. DINEMATOCRICUS PERSTRIATUS, sp. nov.

TYPE.— M. C. Z. 4,755. PARATYPE.— M. C. Z. 4,756. Fijis: Waiyanitu (W. M. Mann).

General color black; typically each segment below level of pore with a flavous stripe behind suture not extending to caudal border. Legs flavous to pale ferruginous.

Head with sulcus distinct above and below but interrupted in the frontal region. Foveolae 2 + 2.

Collum failing much of attaining the lower level of the second tergite. Lower ends with angles widely rounded but lateral margin somewhat flattened.

The segments in general both below and on the sides and across the dorsum finely densely striate, the striae not so fine as, and the intervening ridges coarser than, in *D. sericoides* and allied species all of which have a silky lustre. On the dorsum part of the striae branch dichotomously, while in the middorsal region they form a series of arches. Segmental suture not evident. Covered zone of segments smooth. Scobina not present.

Anal segment lacking striae. Scutum failing much of covering the valves above. Mesal borders of valves not elevated.

The median plate of the gonopods has the basal portion anteriorly convex; the distal process is long, exceeding the basal plate in length, narrow, attenuated moderately distad and with the distal end bent cephalad. The anterior branch of the telopodite of the posterior gonopod coarser and longer than the other, the telopodite bent at level of bifurcation and the lesser branch diverging from the other, the middle of which it surpasses.

Number of segments, forty and forty-two.

Length (male), about 26 mm.; width, 2.6 mm.

581. DINEMATOCRICUS NANNOIDES, sp. nov.

TYPE.— M. C. Z. 4,748. PARATYPES.— M. C. Z. 4,749. Fijis: Taviuni (W. M. Mann).

The color is black with the legs ferruginous.

The sulcus on the head is discontinuous or at least very obscure in the frontal region. Setigerous foveolae 2 + 2. Surface with very fine points.

Collum widely rounded beneath and margined in the usual way. Surface with fine coriarious impressed lines. Second tergite extending much below its level.

The surface of the other segments is also marked with densely arranged fine and weak lines which are coriarious in arrangement but dominantly longitudinal. Segmental suture not evident either above or below the pore level. Each segment beneath and on the sides with numerous longitudinal striae; these continue above the pore, where they are more oblique and more widely spaced, to the dorsum, several of the uppermost being curved transversely across the middorsal region and thus intervening between the two series.

Anal scutum caudally rounded, exceeded by the valves. Valves moderately compressed, the inner borders not conspicuously upraised. Surface of valves and scutum with fine coriarious lines like those of the other segments.

In the gonopods of the male the median piece has its basal part subtriangular with the distal tongue linear, rounded apically. In the telopodite of the posterior gonopods the two divisions are slender and nearly equal in length.

Number of segments, forty-two.

Length (female), to near 40 mm.; width, to 4.5 mm.

This species is readily recognized by its small size, few segments and the absence of all scobina.

582. DINEMATOCRICUS LEIOR, sp. nov.

TYPE.— M. C. Z. 4,765. PARATYPES.— M. C. Z. 4,766. Fijis: Taviuni (W. M. Mann).

This species in coloration resembles *D. leucopleurus* in being blackish with a series of light dots along each side of the dorsum and the lower part of the sides and the ventral region paler, light brown to somewhat ferruginous. In the lower light region each segment is darker in front of the suture. Legs fulvous or tinged with ferruginous. Head with a dark angled area between the eyes.

Sulcus interrupted in frontal region.

Collum widely rounded below. Exceeded by the second tergite.

Segments strongly striate up to level of pore; above pore with more widely separated and oblique striae, a few in the middorsal region running transversely on the anterior part of the plate but leaving the posterior part of the middorsal region wholly smooth. No scobina. Anal segment smooth and shining. Valves exceeding the tergite; not compressed or margined.

The middle plate of the gonopods with base semicircular or rather sublunate; the distal process longer than the basal region, strongly narrowed proximally, the distal region expanding into a subovate form. Prongs of the telopodite of the posterior pair very unequal; the longer one curved into an oval outline bending back across its own course; the smaller branch fine, closely appressed to the other the middle of which it does not attain.

Number of segments, forty-two or forty-three.

Length (female), about 45 mm.; width, 4.5 mm.

583. DINEMATOCRICUS PERSIMILIS, sp. nov.

TYPE.— M. C. Z. 4,791. PARATYPES.— M. C. Z. 4,792. Fijis: Nadarivatu (W. M. Mann).

In coloration the pattern is similar, but the light marking on each side of the dorsum of each segment in *D. leucopleurus* has the part or spot on the prozonite obviously farther mesad than that on the metazonite, whereas the reverse relation of the spots holds in the present species; in *leucopleurus* also the anal tergite is black throughout excepting a narrow caudal marginal stripe, and in the present species the side of the tergite is fulvous or whitish in all specimens farther dorsad than the light lateral region of the other segments; and similarly the lateral region of the collum is conspicuously lighter, these large light areas on first and last segments forming a striking feature in the coloration of the species.

The second tergite extends much farther below the collum than in *leucopleurus*.

Number of segments, thirty-eight to forty-one.

Diameter of female, up to 3.2 mm.; of the male, up to 2.8 mm.

Very close to *D. leucopleurus* in coloration, the sculpturing of the segments, in lacking scobina and in other features of general structure. In the gonopods of the male an easily detected difference is in the form of the median plate; in this the basal division is much larger, more strictly semicircular with the caudal margin much less obviously arcuate; whereas in *D. leucopleurus* the distal process is nearly parallel-sided except toward the tip, in the present species the process is strongly acuminate from its base to a narrow tip, the latter, however, rounded and not narrowing or itself acuminate; it equals the telopodite, which in *leucopleurus* is shorter. In the posterior gonopods the lesser branch much shorter and more slender than the other, very closely appressed to it, a little divergent at tip.

584. DINEMATOCRICUS LEUCOPLEURUS, sp. nov.

TYPE.— M. C. Z. 4,757. PARATYPES.— M. C. Z. 4,758, 4,759, 4,764. Fijis: Somo Somo, Lasema, Levuka (W. M. Mann).

Sulcus interrupted in the frontal region. Foveolae 2 + 2.

Collum much exceeded below by the second tergite. A longitudinal fine sulcus or stria at level of eye on each side connected with the one of opposite side by two transverse striae.

Anal valves exceeding the scutum. These parts with coriarious lines, but not striate like the preceding segments.

Median plate of male gonopods formed much as in *D. perstriatus;* basal division nearly sublunate, its proximal margin arcuate and the lateral angles narrow, acute; distal process slender, narrowed at the tip which is acutely rounded, longer than the head division, but bent cephalad at tip as in *perstriatus*. In the telopodite of the posterior pair the branches are straighter, with the lesser one applied closely to the other, not divergent as in the other species.

Number of segments, thirty-five to thirty-seven.

Length (female), 27 mm.; width, 3.1 mm.

This species is very similar to *D. perstriatus* in lacking scobina and in having segments closely, finely longitudinally striate above as well as laterally and below. It differs conspicuously in color, having the lower part of the sides and venter flavous, often of a brick-red cast, the intervening dorsal region greyish black, the prozonites being paler, and of a somewhat bluish cast; along each side of the dorsum a series of small pale spots, a series of light marks also at level of the pores, each mark being a light line from the pore along the longitudinal suture at its level. Anal scutum and valves shining black. Legs flavous.

585. DINEMATOCRICUS FIJIANUS, sp. nov.

TYPE.— M. C. Z. 4,718. PARATYPES.— M. C. Z. 4,719. Fijis: Nagasau (W. M. Mann).

The color of the types is light brown with irregular lighter markings. Legs light testaceous with proximal joints brown.

Sulcus of head discontinuous near level of antennae. Foveolae 2 + 2. Smooth and shining, with some fine striae of usual distribution.

Collum more angular below than in related species, the margin across anterior corner oblique, straight. Margined along anterior corner as well as below. A longitudinal stria at level of eye meeting two transverse sulci running across dorsum as in *D. rex* and two below proceding from a common lower point. Second tergite extending below collum; not excavated.

Sulcus single throughout, no anterior sulcus on any of the segments. Sulcus becoming obscure caudad and then absent above. Scobina from sixth to twenty second segment; each of a series of striae.

Anal scutum longitudinally finely striate like the other tergites. Valves compressed; surface finely coriarious.

Number of segments, fifty-nine to sixty-one.

Length (female), 114 mm.; width, 11.2 mm.; depth, 12.5 mm., the body being compressed and strongly pointed caudally. An adult male is only 84 mm. long and 9.5 mm. wide.

This species is like *D. sericoides* and *amphelictogon* in having the segments with a silky lustre due to densely arranged fine longitudinal striae, the striae in the present form being exceedingly fine. From these species and *D. holosericeus* it is readily distinguished not only by the structure of the gonopods but also in having the caudal margin of some of the anterior segments sinuate over the scobina as in *rex* and *undulatus*. In the gonopods the median plate has the distal process longer and narrower than in others of the group with silky lustre mentioned above, and it is acutely pointed distad. The telopodite of the posterior pair has both branches straight, the inner one extending beyond the middle of the outer.

586. DINEMATOCRICUS MANNI, sp. nov.

TYPE.— M. C. Z. 4,750. PARATYPE.— M. C. Z. 4,751. Fijis: Wainunu (W. M. Mann).

The general color is somewhat olive-brown with the legs ferruginous, sometimes more greenish with the posterior borders of segments brown. Head darker, black or somewhat olive, paler in a median stripe that widens ventrad.

Sulcus of head discontinuous in the frontal region. Surface with deep impressed lines above arranged coriariously. Foveolae 2 + 2.

Collum only a little exceeded by the second tergite. Lower margin widely rounded, margined as usual. Surface with fine coriarious markings.

Surface of other segments with impressed lines very fine, not deep, short, anastomosing but chiefly longitudinal, most distinct on posterior part of ring. Longitudinal striae below and on sides well separated, some occurring also above the pore, these more oblique. Suture absent dorsally. The bisinuation of part of the segments so deep that the scobina are in part uncovered. Scobina occurring only to the twenty second segment inclusive.

Surface of anal segment appearing smooth and shining; under the lens showing coriarious markings. Valves exceeding the scutum; but little compressed, the margins not set off.

Number of segments, fifty-six.

Length (female), near 52 mm.; width, 5.6 mm.

This species is one of several occurring in the Fijis which have the posterior borders of some of the anterior segments bisinuate, an incurving or emargination occurring on each side over the corresponding scobina of the succeeding segment. The emarginations in the present species are particularly strong.

587. DINEMATOCRICUS ATROFASCIATUS, sp. nov.

TYPE.— M. C. Z. 4,761. Fijis: Suva (W. M. Mann).

The general color is brown of a ferruginous tinge with a broad dense black band along each side of the dorsum; the light dorsal band embraced between the two black stripes includes at its outer edge on each side a longitudinal series of lighter fulvous spots, one on the prozonite of each segment. Legs light ferruginous. Anal scutum black excepting a narrow pale caudal border and a ferruginous spot above into the middle part of which the black extends back in an angular tongue.

Sulcus weak or absent in the frontal region. Foveolae 2 + 2.

Collum not attaining lower edge of the second tergite. Surface densely covered with fine impressed points and lightly impressed short striae, the surface to the naked eye appearing smooth and shining.

The surface of the other segments also marked with numerous fine puncta and more weakly impressed short lines. Covered zone of segments smooth or nearly so. In front of sulcus above level of pore on each side a series of well-separated oblique striae the most dorsal of which run transversely parallel to the segmental sulcus or suture with sometimes one or more others in front of it, below pore the longitudinal striae evident in front of suture over the entire side but caudad of it they occur only lower down. The suture distinct, angled at level of pore. Scobina extending to segment twenty-four or twenty-five.

Anal segment with surface like that of the others. Valves exceeding the scutum.

Number of segments, forty.

Length (female), about 40 mm.; width, 4.2 mm.

588. DINEMATOCRICUS LAMPRODESMUS, sp. nov.

TYPE.— M. C. Z. 4,723. PARATYPE.— M. C. Z. 4,724. Fijis: Labasa (W. M. Mann).

Shining olive-black. Legs brown; a paratype light olive with segments bordered behind with dark and legs more ferruginous.

Only one large foveola distinguishable on each side in the type. Surface of head in part, especially above, finely coriarious in markings.

Collum not reaching lower edge of the second tergite. Margined below and also with a short submarginal sulcus at the anterior corner detached from the lower margining sulcus. Surface smooth and shining.

Anterior covered border of segments finely vertically striate. On some anterior segments also with some transverse striae exposed in front of the suture, these striae wavy and discontinuous. Suture distinct on the sixth segment, weak on the seventh and obscure or absent above on the following ones. Surface in general smooth and shining. Scobina in form of deep lunate impression followed by the usual very fine striae; extending caudad to the thirty third segment.

Anal tergite of usual form, caudally rounded, much exceeded by the valves, surface smooth and shining as is also that of the valves. The latter with surface somewhat flattened but the edges not set off by more marked compression.

Number of segments, forty-six.

Length (female), about 95 mm.; width, 10 mm.

589. DINEMATOCRICUS PARVIOR, sp. nov.

TYPE.— M. C. Z. 4,728. Solomons: Ngi (W. M. Mann).

Deep olive. Legs lighter, more brownish.

Sulcus of head discontinuous at middle. Foveolae 2 + 2. Lower emargination with three distinct teeth.

Collum well rounded laterally. Not reaching lower level of second tergite. Margined below and up the front of the corner in the usual way. Surface with weak coriarious lines. A wavy longitudinal stria at level of eye.

Surface of anterior segments also with weak coriarious lines, but caudad these quickly become obsolete, leaving the surface wholly smooth. Longitudinal striae below level of pore deep, more numerous and complete in front of suture, where there are also a few above the level of the pore. On most segments the transverse sulcus is lost in a shallow furrow above which lies a number of weak furrows paralleling it. Scobina present to segment thirty-seven.

Anal scutum and valves with sparse coriarious lines. Valves exceeding the scutum as usual.

The distal process of the median plate of the male gonopods narrowed proximally, being ovatelanceolate in form much as in *D. obvius*. The telopodites are also much as in that species, crossing in the middle line and with the lesser branch very short, and well below middle of the longer one; telopodite shorter than in *obvius*.

Number of segments, sixty-one.

Length (male), near 62 mm.; width, 7 mm.

590. DINEMATOCRICUS TULAGIANUS, sp. nov.

TYPE.— M. C. Z. 4,915. PARATYPES.— M. C. Z. 4,916. Solomons: Tulagi (W. M. Mann).

Sulcus of head interrupted in frontal region, distinct elsewhere. Clypeal foveolae 2 + 2. Antennae short; sensory cones four.

Second tergite extending below level of lower end of collum, flattened below. Collum finely margined below and about anterolateral corner, not otherwise striate, smooth.

Striae of metazonites on lower sides sharply impressed, those of the prozonites more lightly impressed, curving upward at anterior ends, especially the upper ones which occur farther dorsad than those of the metazonite but do not attain the level of the pore. Tergites crossed by two sutures both of which are distinct entirely across dorsum; the anterior one of these takes its origin near level of pore. Posterior margins of most scobiniferous tergites with posterior margins strongly sinuate over each scobinum of succeeding plate. Scobina extending from seventh to thirty seventh segments.

Anal tergite much exceeded by the valves. The latter strongly compressed, their mesal borders elevated.

In the gonopods of the male the anterior median plate has the median distal tongue of a sublanceolate form, narrow proximally and with apex narrowly rounded; the distal margin of basal part on each side is straight, at right angles to axis of tongue but with ectal corner on each side rounded. Telopodite of posterior pair with both branches very slender, the inner one curving mesad and diverging from the other; the latter curving first gently caudad of mesad and then more strongly caudad at tip.

Number of segments, forty-seven or forty-eight.

Length (male), 48 mm.; width, 4.2 mm.

A species characterized by its peculiar coloration, which is brown to reddish brown with caudal borders of somites darker, the color typically of a reddish cast; the legs of the male brick-red, those of the female ordinarily paler and less reddish. The color in general often suggests that of *Trigoniulus lumbricinus*.

591. DINEMATOCRICUS PATRUELIS, sp. nov.

TYPE.— M. C. Z. 4,925. PARATYPES.— M. C. Z. 4,926. Solomons: Pamua (W. M. Mann).

The entire body uniform shining black with legs ferruginous.

Sulcus on head of male typically continuous though weaker in the frontal and again in the upper clypeal region where in the female, at least, it is sometimes vague or absent. Clypeal foveolae 2 + 2.

Collum as usual widely rounded and shortly weakly marginate below. Second tergite extending much below collum, flattened beneath.

Segmental suture absent or very vague in upper dorsal region on all somites, distinct just above pore and down sides, curving closely about pore which is in line with it. Scobina very broad but few in number, not extending caudad of fourteenth segment. Above the scobina the margin of the preceding tergite in each case obviously sinuate.

Anal tergite caudally rounded, slightly exceeded by the valves.

Gonopods of male with distal part of median plate of usual sublanceolate form though rather broader than usual, distally subacute, very narrowly rounded. The telopodite of the posterior gonopods with the slender distal branches both curving in general mesad, but with the inner branch at tip curving up a little more dorsad than the somewhat longer outer branch.

Number of segments, forty-six.

Length, near 37 mm.; width, to 4.5 mm.

The species is apparently related to *D. biincisus* (Pocock) from New Britain, but the latter is much larger, being 80 mm. long with a width of 7 mm., and differs in having the caudal border of segments light banded; the posterior lateral region is also light. Its gonopods unknown.

592. DINEMATOCRICUS DIDYMUS, sp. nov.

TYPE.— M. C. Z. 4,940. Solomons: Tulagi (W. M. Mann).

Sulcus of head continuous and well marked. Foveolae 2 + 2.

Second tergite extending much below collum, the lower margin in side view less angulate at middle than in *D. patruelis.*

Suture of segments obscure or absent above as in the other species. Posterior borders of some of the anterior segments also similarly strongly bisinuate, incurving over the scobina. The latter very large, as in *patruelis* and apparently *biincisus* (Pocock), and ceasing at or near the fourteenth segment as in the former species.

Anal tergite exceeded by the valves Median plate of male gonopods strongly narrowed at base above which subelliptic with acute tip which is nearly on a level with distal end of anterior gonopods. Branches of telopodite similar to those of *patruelis* but much less strongly curved and the two branches uniformly diverging distad, not first diverging and then again approaching each other.

Number of segments, forty-two.

Exceedingly close to *D. patruelis.* It differs strikingly in color, being, instead of uniform black, brown with a narrow dark annulus along the caudal border of each segment. Anal tergite blackish as are also the valves dorsoanteriorly. Legs also brown instead of ferruginous.

593. DINEMATOCRICUS MANEUS, sp. nov.

TYPE.— M. C. Z. 4,927. PARATYPES.— M. C. Z. 4,928. Solomons: Wainoni Bay (W. M. Mann).

General color of segments brownish black with metazonites cingulate with light brown, the light band broadening below pore and sometimes below embracing prozonite as well as metazonite while dorsally it may be absent or present only across anterior region of metazonite, the caudal portion remaining blackish like the prozonite. Legs reddish brown or ferruginous. Collum bordered all around with light, otherwise shining black like the head.

Sulcus of head rather weak, interrupted briefly in frontal region. Clypeal foveolae 2 + 2.

Lateral striae of typical segments of median region rather coarse and deeply impressed, well separated excepting ventrally, angled at suture and rising obliquely both in front of and behind the latter but more so in front as usual. Similar striae for a short distance above pore but this not crossing posterior portion of metazonite. Suture distinct below and immediately above pore but across dorsum passing into a shallow broader and less distinct furrow; suture above pore in line with center of pore, curving closely about the latter above but only gradually resuming position below. Scobina very small, ceasing at twenty third segment.

Number of segments, fifty-five.

Length, up to near 40 mm.; greatest width, 5.6 mm.

594. DINEMATOCRICUS AUKIANUS, sp. nov.

TYPE.— M. C. Z. 4,930. PARATYPES.— M. C. Z. 4,931. Solomons: Auki (W. M. Mann).

Body olive-black, the color deeper along caudal border, anterior region of covered part of prozonite lighter and a spot on each scobinum often yellow. Legs light ferruginous.

Sulcus of head distinct and complete though weaker and sometimes obscure for a short distance in the frontal region. Clypeal setigerous foveolae 2 + 2. Antennae when bent back along side reaching to fourth segment.

Second tergite extending much below collum, the latter of usual general form and not specially marked.

Suture of segments complete though fine and not deep across dorsum. Covered part of prozonite and anterior part of exposed portion dorsally with a number of strong transverse striae of which the most posterior, taking its origin well above the pore on each side, extends completely across dorsum, this much coarser and deeper than the primary suture. On venter and lower part of side of typical segment the striae are coarse and strongly marked, horizontal across metazonite and curving dorsad of cephalad in front of suture; the striae in front of suture continuous up to near pore but those caudad of suture ceasing toward middle of side. Suture contiguous with pore, curving about and embracing the dorsocaudal fourth of its circumference. Scobina small, extending to the thirty fifth somite. Segments caudally obviously bisinuate, the margin incurving over each scobinum of the succeeding segment.

Anal tergite rounded, shorter than valves. Mesal region of valves strongly compressed and elevated, roughened with irregular impressed lines.

The tongue of anterior median plate of gonopods of the usual sublanceolate form; the main plate with anterior margin nearly transverse, a little convex, with distolateral corners rounded. The telopodite long, the outer terminal branch curving mesad and then proximad.

Coxae of the third to seventh legs in male with the usual subconical ventral processes of which those of the third segment are largest.

Number of segments, forty-eight.

Length, to 60 mm.; width, to 5 mm.

595. DINEMATOCRICUS EURHABDUS, sp. nov.

TYPE.— M. C. Z. 4,932. PARATYPES.— M. C. Z. 4,933. Solomons: Auki (W. M. Mann).

Sulcus of head complete. Foveolae 2 + 2. Antennae reaching fourth segment or nearly so.

Second tergite extending well below level of collum, flattened beneath. Collum of usual form.

In the ordinary somites the suture curves strongly about the caudal border of the pore; it is well marked laterally below and for some distance above pore but is weak or obscure across middorsal region. Metazonite rising above level of prozonite. Oblique striae of prozonites occurring well up toward pore, the striae of metazonites ceasing near middle of side. Scobina moderate, extending to thirty fourth somite. Caudal edge of somites bisinuate over scobina.

Anal valves a little compressed, exceeding the last tergite.

Tongue of median plate of anterior gonopods lanceolate with apical region long and acuminate. Telopodite with inner branch very short, closely applied to principal branch, the outer branch very long and commonly curving across the opposite one in middle line.

Number of segments, forty-one to forty-three.

Length of male type, 34 mm.; width, 3.5 mm. Largest female 54 mm. long, with width 5.5 mm.

At once distinguishable from the preceding species in having a narrow middorsal longitudinal blackish stripe set off on each side by a still narrower fulvous stripe. The region between the middle of sides and the dorsal light stripe blackish like the middorsal stripe, the lower part of sides and the venter fulvous. Anal tergite mostly black dorsally, fulvous proximally and below; valves fulvous. Legs fulvous.

596. Dinematocricus mimetes, sp. nov.

Type.— M. C. Z. 4,934. Paratypes.— M. C. Z. 4,935. Solomons: Auki (W. M. Mann).

Very close to *D. eurhabdus*. It has the same color-pattern but the fulvous stripes are obscure and sometimes almost wholly obliterated. The fulvous band along lower part of side when present not extending so far dorsad. The male is larger and more robust, more nearly approaching the female in size.

In the gonopods of the male the inner branch, while small, is a little longer than in the species mentioned and curves strongly mesad away from the outer branch. The latter differs in being nearly straight instead of strongly curving. The tongue of the anterior median plate is more of a narrowly elliptic form beyond the narrowed, elongate basal part, not distally incurving on the sides and slenderly acuminate. Anterior gonopods distally stouter.

Somites more strongly sculptured, the prozonite in particular more strongly marked with transverse furrows and striae, a furrow a little in front of suture above especially deep and well marked though not always complete.

Number of segments forty-seven to forty-nine as against forty-one to forty-three in the other species.

Length of male, 48 mm.; width, 4 mm.

597. Dinematocricus plenus, sp. nov.

Type.— M. C. Z. 4,946. Paratypes.— M. C. Z. 4,947. Solomons: Florida (W. M. Mann).

The general color of the prozonites is greyish brown, while the metazonites are a deeper, more reddish, brown. Legs ferruginous distally, more brownish proximally. Edge of labrum and of collum all around, black.

Sulcus on head vague or absent for a short distance in frontal region, elsewhere distinct and continuous. Foveolae of clypeus, 2 + 2.

Second tergite extending well below collum, flattened beneath.

Segmental suture very distinctly impressed entirely across dorsum. Bending forward at level of pore to come in contact with it. A secondary suture in front of the primary one, than which it is in general much finer, especially in posterior region. Striae on metazonite beneath, these descending a little from behind forward to suture; striae on prozonite much finer and weaker, often scarcely detectable. Scobina very small but deeply impressed, ceasing at twenty fourth somite.

Anal valves much exceeding the tergite, somewhat angulate above, mesally compressed.

Number of segments, sixty-three.

Length (female type), near 70 mm.; width, 6 mm.

598. DINEMATOCRICUS IMPRESSIOR, sp. nov.

TYPE.— M. C. Z. 4,139. Solomons: Pawa, Ngi (W. M. Mann).

Agreeing closely with *D. fratrellus* in coloration, proportions, number of somites, and form and distribution of scobina. It differs obviously in the impressions on the somites. The segmental suture is more deeply impressed, especially above; opposite the pore it is more widely and less strongly curved, the curve in *D. fratrellus* embracing the pore more closely above and extending farther cephalad before continuing in the straight dorsal part. Pore larger. The most readily noticeable difference is the presence on the prozonite dorsally of strong, somewhat sinuous transverse striae which bifurcate and unite sparsely and of which the most caudal, taking its origin just above anterior edge of pore, is typically deep and complete or sometimes interrupted, forming the so-called second suture.

Number of segments, forty-eight.

Length, about 46 mm.; width, 5.5 mm.

599. DINEMATOCRICUS RUBRIORIPES, sp. nov.

TYPE.— M. C. Z. 4,941. Solomons: Wai-ai (W. M. Mann).

This species also belongs in the *D. fratrellus* group which appears also to include *biincisus* (Pocock). It differs from *D. fratrellus* and *impressior* in having the legs ferruginous instead of brown. It differs from those species also in the course of the segmental suture which remains essentially straight or even bows a little in toward the pore instead of presenting a strong curve away from the pore; thus the pore lies wholly in front of the suture instead of being in line with its dorsal and ventral parts. Lacking the secondary suture characteristic of *D. impressior.*

The type has forty-six somites as against forty-eight in the two preceding species.

Length of type, about 43 mm.; width, 5 mm.

600. DINEMATOCRICUS MALAITAE, sp. nov.

TYPE.— M. C. Z. 4,952. Solomons: Malaita, interior (W. M. Mann).

Color somewhat olive-black, wholly without lighter cingulations, but some of caudal segments lighter. Head lighter in frontal and clypeal regions with a dark median spot on frontal light region. On each side of body a series of small ferruginous spots over and in line with the scobina. Legs fulvous.

Sulcus of head distinct and continuous. Foveolae 2 + 2.

Second tergite extending well below collum, not excavated beneath.

Pore in line of suture which curves closely about its caudal half. Suture distinct. On most segments a secondary suture clearly evident in front of the true one with commonly other less complete transverse striae farther forward, these being less evident in the posterior region. Scobina ceasing at the thirty second segment. Posterior margins rather weakly but distinctly sinuate above the scobina.

Anal tergite much surpassed by the valves the mesal borders of which are elevated and compressed.

Legs long. Coxal processes of third and fourth legs of male obviously longer and more pointed than the others.

Tongue of anterior median plate of male gonopods lanceolate beyond the narrow basal stalk; anterior margin of basal division rising convexly on each side from base of stalk, the corners well rounded. Outer branch of telopodite of posterior gonopods straight to near tip where it curves moderately mesad of distad, slender throughout, acute, much longer than the inner branch.

Number of segments, forty-eight.

Length (male), near 52 mm.; width, 4.2 mm.

601. SPIROBOLELLUS RAINBOWI Brölemann.

Records Austr. mus., 1913, **10**, p. 117, pl. **16**, fig. 35–38.[1]

LOCALITY.— New South Wales: Shoalhaven Distr., Mt. Sassafras.[1]

602. SPIROBOLELLUS CHRYSOGRAMMUS Pocock.

Weber's Reise, 1894, **3**, p. 400.[1]

Spirobolellus chrysogrammus Carl, Rev. Suisse. zool., 1912, **20**, p. 166, fig. 25, 26.[2] Attems, Semon's Forschungsreise, 1898, **5**, pt. 5, p. 515.[4] Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 277.[3]

LOCALITIES.— Celebes: Makassar,[1, 2] Loka.[2] Amboina.[4] Kei Islands: Little Kei.[3]

603. SPIROBOLELLUS CHRYSOPROCTUS Pocock.

Weber's Reise, 1894, **3**, p. 400.[1]

LOCALITY.— Celebes: Luwu.[1]

604. SPIROBOLELLUS SOLITARIUS Carl.

Rev. Suisse zool., 1912, **20**, p. 168, pl. 6, fig. 27.[1]

LOCALITY.— Celebes.[1]

605. SPIROBOLELLUS DRYMOPHILUS, sp. nov.

TYPE.—M. C. Z. 4,863. PARATYPES.—4,864. New Zealand: Kaori Forest, near Swainson (W. M. Wheeler).

Body black; along each side of dorsum between level of pores and middorsum a series of light ferruginous spots, one on each segment; each spot obliquely subtriangular or broadly T-shaped, the apex of triangle or middle piece of the T rising obliquely dorsocaudad, the spot sometimes including a dark mark. Base of anal scutum with a transverse band of ferruginous interrupted or not in the middorsal region. Anal valves also ferruginous on each side along anterior border. Antennae and legs ferruginous.

Setigerous foveolae 2 + 2. Antennae very short, fifth and sixth joints moderately clavately thickened. Eye subtrapeziform with base caudad, a little convex; ocelli typically in four transverse series, *e. g.*, 7, 6, 5, 3; a little less than twice their diameter apart. Sulcus widely interrupted in frontal region.

Collum strongly narrowed down the sides; lower corners rounded with short lateral rising caudodorsad. Second tergite extending but slightly below level of callum, flattened beneath.

No segmental sutures, these represented only by a broad furrow especially evident down the sides. Striate beneath, the anterior ends of the striae running obliquely across the free prozonal region; on the sides are oblique striae on prozonite but no striae on metazonite; near level of pore on prozonite numerous fine wavy transverse striolations on the anterior part of the free region and posterior part of the covered region, the latter otherwise smooth and unmarked. Dorsal region marked with weak, short, and chiefly longitudinal impressed lines.

Anal scutum caudally rounded, just covering the valves. Valves not margined.

In the male the third to sixth legs with slight ventral coxal processes, those of third, fourth, and fifth low and subconic, those of the last two pairs distally broader. Anterior legs of male not padded. Anterior median plate of gonopods large, subtriangular but distally truncate, the distal edge typically a little indented at the middle, much broader and less elongate than in Zygostrophus; supported on its caudal surface by a narrower, distally acute and very thick, almost subcylindrical chitinous plate or thickening suggesting a fused second median plate; proximal arms broad, on each side extending ectoproximad against the gonopod but not coiled about the latter. not fused with the outer chitinous plate and the latter not extending in mesad as a distinct lobe. Coxal piece of anterior gonopod broad proximally, abruptly reduced near middle to about half the basal width, the inner edge continuous, the outer abruptly bent in near middle of length, the distal narrower part still broad and plate-like and distally rounded. Telopodite longer than coxa, distally simple, broadly rounded. An opening between the two divisions anterocaudally leaves distal part of posterior gonopod exposed.

Number of segments, forty to forty-three.

Length (female), 34 mm.; width, 3.5 mm. Males smaller.

606. SPIROBOLELLUS KURANDANUS, sp. nov.

TYPE.— M. C. Z. 4,803. PARATYPES.— M. C. Z. 4,804, 4,805. Queensland: Kuranda (W. M. Wheeler).

Characterized in color by a series of triangular black marks along the middorsum, each mark being connected with the succeeding one by a narrow black line, the bases of the marks cephalad. The triangular markings set off on each side by a zig-zag yellow line. Below this on each side the prozonite blackish, the dark area narrowing and fading out ventrad; the metazonites light ferruginous. Anal segment and collum dark, but valves in part lighter. Head with a black area between eyes continued ventrad as a bifurcate band to the yellow labial region; antennal sockets bordered on mesal side with black, the space between this and the middle dark band areolated with a network of black as in also the vertex. Legs fulvous. Antennae with dark markings.

Sulcus of head distinct above and below as usual. Eyes triangular, rather small, fully twice their diameter apart; ocelli in four series, *e. g.* 6, 5, 4, 2. Antennae very short.

Collum only moderately narrowed below, the lower end widely rounded, the caudal margin just above it convex, the anterior slightly concave.

Below the level of the pores the prozonites marked with striae which curve up cephalodorsad and finally turn transversely; just above the pore these replaced by some short curved impressions but the middorsal region smooth, without striolations. A series of horseshoe-shaped markings along the position of the suture, which is not evident, being represented by a slight depression. Metazonites above vaguely longitudinally rugose; below with the usual striae. Pores very small, a little in front of the middle of the metazonite but widely removed from the position of the suture.

Anal scutum rounded behind, just covering the valves. The latter with mesal borders but weakly elevated, not set off by distinct sulci.

Number of segments, forty-four.

Diameter (female), 2.8 mm.

607. STROPHOBOLUS IMMIGRANS Chamberlin.

Proc. Biol. soc. Wash., 1920, **33**, p. 38.[1]

LOCALITY.— Taken in California, U. S. A., on Stag-horn Fern imported from Australia.[1]

608. STROPHOBOLUS AUSTRALIANUS Chamberlin.

Proc. Biol. soc. Wash., 1920, **33**, p. 38.[1]

LOCALITY.— New South Wales: Southerland.[1]

609. PSEUDOSPIROBOLELLUS BULBIFERUS (Attems).

Pseudospirobolellus bulbiferus Carl, Rev. Suisse zool., 1912, **20**, p. 169.[1] Abhandl. Senckenb. gesellsch., 1912, **34**. p. 277.[2]

LOCALITIES.— Celebes.[1] Aru Islands: Kabroor Island, Seltutti.[2]

TRIGONIULIDAE.

610. ACANTHIULUS BLAINVILLEI (Le Guillou).

Julus blainvillei Le Guillou, Bull. Soc. philom. Paris, 1841, p. 80.
Trigoniulus blainvillei Silvestri, Ann. Mus. civ Genova, 1894, **34**, p. 95.
Spirobolus dentatus Daday, Term. füz., 1893, **16**, p. 101.[1]
Acanthiulus blainvillei Brölemann, Records Austr. mus., 1913, **10**, p. 109, pl. 15, fig. 25, 26.[2]

LOCALITY.— New Guinea.[1, 2]

610a. ACANTHIULUS BLAINVILLEI var. INTERMEDIUS Attems.

Zool. jahrb. Syst., 1914, **37**, p. 382.[1]

LOCALITIES.— New Guinea: Kaji Bay, between Najd and Sekopo, Tami River, Astrolabe Bay.[1]

610b. ACANTHIULUS BLAINVILLEI SEPTENTRIONALIS Attems.

Zool. jahrb. Syst., 1914, **37**, p. 385.[1]

LOCALITIES.— New Guinea: Tanak Verah Bay; Holland; south of Humboldt Bay; Zoutbron.[1]

611. ACANTHIULUS WOLLASTONI Hirst.

Trans. Zool. soc. London, 1914, **20**, p. 330, f. 17.[1]

LOCALITY.— Dutch New Guinea: Mimika River.[1]

612. ACANTHIULUS MURRAYI Pocock.

Spirobolus dentatus Daday, Term. füz., 1893, **16**, p. 101, pl. 3, fig. 1–7.[1]
Acanthiulus murrayi Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 276.[2]

LOCALITIES.— Aru Islands: Samang, Wokan, Ngaiguli, Terangan, Dabo, Wammer,[2] Wokan Dabo.[1]

PLOKAMOSTROPHUS, gen. nov.

Like Trigoniulus in having tarsal pads on the anterior legs of male, but differing in having strongly developed processes on coxae of third to seventh legs and in the structure of the gonopods. In these the telopodite of anterior pair similarly distally broad but on mesal side presenting a large distinct process or horn which extends distad beyond end of principal part and distally bends more or less ectad; telopodite not segmented. Anterior median plate distally truncate.

GENOTYPE.— *P. amphelictus*, sp. nov.

613. PLOKAMOSTROPHUS AMPHELICTUS, sp. nov.

TYPE.— M. C. Z. 4,936. PARATYPES.— M. C. Z. 4,937 and 4,938. Solomons: Tulagi, Auki (W. M. Mann).

General color black with most metazonites typically ferruginous below level of pore and also on dorsum each side of median longitudinal dark stripe, the dorsal spots typically more reddish; dorsally also the prozonites are paler anteriorly. Legs ferruginous.

Head with sulcus obscure or absent excepting in clypeal region in the lower part of which it is deeply impressed. With several arcuate transverse striae near level of antennae. Clypeal setigerous foveolae 2 + 2. Antennae short.

Collum of typical Trigoniulus form. Second tergite not extending below level of collum or scarcely so.

Segmental striae distinct laterally but disappearing above in a shallow transverse depression or furrow; widely curving opposite pore which is not in contact with it. A transverse series of deep impressed dots and marks in dorsal furrow, the dorsal surface otherwise essentially smooth. Below level of pore prozonite marked with a series of finely beaded striae which curve dorsocephalad; metazonite with striae on ventral surface.

Anal tergite caudally rounded, scarcely equalling the valves. Latter sometimes compressed dorsomesally, the upper mesal border then appearing a little elevated.

Processes of coxae of third to seventh legs strongly compressed anterocaudally, those of the third pair distally most acute, the others being distally blunt and rounded.

The anterior median plate of male gonopods with distal median portion or tongue narrowly subtrapeziform, its sides distally more nearly parallel than proximally, the distal corners rounded with margin between them straight. The telopodite of anterior gonopods with main part distally covex, extending a little beyond coxa; mesal edge thin, the distal process at distal end rounded, on ectal side near middle bearing a small angular process.

Number of segments, forty-eight or forty-nine.

Length, about 42 mm.; width, 3.2 mm.

614. PLOKAMOSTROPHUS MANNI, sp. nov.

TYPE.— M. C. Z. 4,883; PARATYPES.— M. C. Z. 4,884. Solomons: Santa Anna (W. M. Mann).

General color black, a narrow caudal border on each segment obscurely ferruginous above, the stripe widening and becoming more distinct below. Legs ferruginous. In females especially often an obscure longitudinal ferruginous line or series of dots on each side of the dorsum.

Eyes transversely broadly subelliptic; ocelli in four series. Sulcus as usual. Foveolae 2 + 2.

Collum strongly narrowed down the sides and margined up to level of eyes as usual; not striate.

Segments constricted or encircled by a furrow deep on the sides and shallow above; the furrow marked dorsally with a series of curved impressed marks and puncta. Metazonites with numerous longitudinal striae; prozonites with oblique striae present farther dorsad than those of metazonite, attaining very nearly the level of the pores.

Anal scutum not quite wholly covering the valves, rounded caudally. Valves not margined.

The usual tarsal pads present in the male.

Number of segments, forty-seven.

Length of male, near 33 mm.; width, to 3.2 mm.

Easily distinguished from the other species here described by the different form of the male gonopods. The anterior median plate has its distal undivided portion longer, almost equalling the anterior division of the first gonopods in length, and not triangular in form, being narrowly trapeziform, the sides converging moderately distad and the distal end broad and straight. The anterior or coxal plate of first gonopods broadly concavely excavated at distal end with mesal angle rising higher than the ectal. Distal end of telopodite broadly rounded, longer than coxa in the distal concavity of which it fits, its mesodistal corner produced as usual, the process low, proportionately narrow, and distally rounded.

615. Plokamostrophus brachycerus (Silvestri).

Trigoniulus brachycerus Silvestri, Ann. Mus. civ. Genova, 1899, **39**, p. 448, fig. 18–20.[1]

Locality.— British New Guinea: Goodenough Island.[1]

616. Plokamostrophus obscurus (Silvestri).

Trigoniulus obscurus Silvestri, Ann. Mus. civ. Genova, 1899, **39**, p. 447, fig. 14–16.[1]

Locality.— British New Guinea: Dilo.[1]

617. Plokamostrophus flavipes (Attems).

Trigoniulus flavipes Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 508, pl. 24, fig. 47, 48.[1] Carl, Rev. Suisse zool., 1912, **20**, p. 161.[2]

Localities.— Celebes: Minahassa,[1] Lokon Volcano,[2] top of Suvara,[2] Soputan Volcano.[2]

618. Plokamostrophus venatorius (Silvestri).

Trigoniulus venatorius Silvestri, Term. füz., 1899, **22**, p. 210, pl. 12, fig. 30–32.[1]

Locality.— New Guinea: Erima, Astrolabe Bay.[1]

619. Plokamostrophus gracilis (Silvestri).

Trigoniulus gracilis Silvestri, Term. füz., 1899, **22**, p. 210, pl. 13, fig. 34–36.[1]

Locality.— New Guinea: Erima, Astrolabe Bay.[1]

620. Spirostrophus ambonensis (Attems).

Trigoniulus ambonensis Attems, Semon's Forschungsreise, 1898, **5**, p. 512, fig. 3–5.[1] Carl, Rev. Suisse zool., 1912, **20**, p. 863.[2]

Localities.— Celebes: Mapane.[2] Amboina.[1]

621. SPIROSTROPHUS UNCINATUS (Attems).

Trigoniulus uncinatus Attems, Semon's Forschungsreise, 1898, **5**, p. 513, pl. 41, fig. 6–8.[1] Carl, Rev. Suisse zool., 1912, **20**, p. 164, pl. 6, fig. 29.[2]

LOCALITIES.— Amboina.[1] Celebes: Buol.[2]

622. SPIROSTROPHUS TACHYPUS (Pocock).

Trigoniulus tachypus Pocock, Weber's Reise, 1894, **3**, p. 397, pl. 22, fig. 29.[1] Carl, Rev. Suisse zool., 1912, **20**, p. 165, fig. 16, pl. 6, fig. 28.

LOCALITY.— Saleyer.[1]

623. SPIROSTROPHUS SQUAMOSUS (Carl).

Trigoniulus squamosus Carl, Rev. Suisse zool., 1912, **20**, p. 161, fig. 15, pl. 6, fig. 30, 31, 34.[1]

LOCALITY.— Celebes: Posso Lake.[1]

624. TRIGONIULUS REONUS Pocock.

Weber's Reise, 1894, **3**, p. 395, pl. 22, fig. 27, 27a.[1]

LOCALITY.— Flores: Reo.[1]
Male unknown.

625. TRIGONIULUS COMMA Attems.

Semon's Forschungsreise, 1898, **5**, p. 513.[1]

LOCALITY.— Queensland: Burnett District.[1]
Known only from the female.

626. TRIGONIULUS BURNETTICUS Attems.

Semon's Forschungsreise, 1898, **5**, p. 513.[1]

LOCALITY.— Queensland: Burnett District.[1]

627. TRIGONIULUS ERYTHROPISTHUS Attems.

Semon's Forschungsreise, 1898, **5**, p. 514.[1]

LOCALITY.— New Guinea.[1]
Only the female known.

628. TRIGONIULUS ORINOMUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 512, pl. 24, fig. 51.[1]

LOCALITIES.— Halmaheira: Soah Konorah. Oba. Ternate.[1]

629. TRIGONIULUS SOLEATUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 514.[1]

LOCALITY.— Ternate.[1]

630. TRIGONIULUS BRACHYURUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 508, pl. 23, fig. 39, 41.[1]

LOCALITY.— Batjan.[1]

631. TRIGONIULUS PARVULUS Attems.

Abhandl. Senckenb. gesellsch., 1897, **23**, p. 515.[1]

LOCALITY.— Batjan.[1]

632. TRIGONIULUS LUMBRICINUS (Gerstaecker).

Spirobolus lumbricinus Gerstaecker, Gliederthier-fauna Sansibar, 1878, p. 516.
Spirobolus goesi Porat, Bih. Svensk. akad. Handl., 1876, **4**, no. 7, p. 35.
Trigoniulus goesi Pocock, Weber's Reise, 1894, **3**, p. 395.[1] Ann. mag. nat. hist., 1898, ser. 7, **1**, p. 327.[3]
Trigoniulus (?) goesi Schnee, Zool. jahrb. Syst., 1904, **20**, p. 406.[2]
Trigoniulus lumbricinus Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 27.[4]

LOCALITIES.— Celebes: Makassar.[1] Saleyer.[1] Kei Islands: Kei-Dulah.[4] Aru Islands: bet. Dobo and Wangil, Wammer.[4] Flores: Reo, Bari.[1] Timor: Kupang.[1] Ceram: Wahaai; Amboina (Thomas Barbour). Fijis: Nansori, Ba, Labasa (W. M. Mann); Suva (A. G. Mayer, W. M. Mann). Marshalls (?).[2] Ellice Island: Rotuma.[3]

A very widespread form, being carried readily through the agency of man.

633. TRIGONIULUS PLEURALIS Carl.

Abhandl. Senckenb. gesellsch., 1912, **34**, p. 274.[1]

LOCALITY.— Kei Islands: Great Kei,[1] Kei-Dulah, Elat.

Only the female known.

634. TRIGONIULUS INCOMMODUS Carl.

Abhandl. Senckenb. gesellsch., 1912, **34**, p. 274.[1]

LOCALITY.— Kei Island: Great Kei: Elat.[1]

635. TRIGONIULUS CERAMICUS Attems.

Bijdr. dierk., 1915, **20**, p. 8, fig. 14–18.[1]

LOCALITY.— W. Ceram: Honitetu.[1]

636. TRIGONIULUS TERNATENSIS, sp. nov.

TYPE.— M. C. Z. 4,786. Ternate (Thomas Barbour).

The color is black excepting the flavous, covered anterior zone and a flavous stripe along caudal margin which is very narrow above but widens and becomes more ferruginous down the sides. Anal scutum black excepting a very narrow flavous caudal border; the valves black proximally, fulvous caudally. Legs and antennae fulvous.

Head smooth. Sulcus absent in vertigial and frontal regions but traceable below. Eyes fully twice their diameter or a little more apart.

Collum of usual form. Smooth, wholly lacking striae or impressions. Marginations as usual. Rounded below and about the anterior angle while the posterior angle is subrectangular.

Zonites strongly striate below level of the pores, each stria curved ventrad at the sulcus and rising obliquely in front of it. Across the dorsum between the pores along the position of the suture as series of pronounced, coarse, impressions, in outline horseshoe-shaped to circular, the zonites otherwise wholly smooth above, these markings forming a salient characteristic of the species. Two or three such impressions may also occur below the pore. The suture proper absent as such, but represented by a wider depression or furrow, especially below.

Anal scutum rounded behind, equalling the valves, wholly smooth. Valves smooth, mesally very weakly and very narrowly margined.

Number of segments, forty-eight.

Width (female), 3.2 mm.

637. TRIGONIULUS EURHABDOTUS, sp. nov.

TYPE.— M. C. Z. 4,778. Ternate (Thomas Barbour).
Diameter (male), 2.6 mm.

Fulvous or ferruginous beneath and up the sides to or nearly to the level of the pores and in a narrow median longitudinal dorsal stripe, the remaining portion of the dorsum between pore-series being black. Legs fulvous.

Eyes subcircular, narrower in the antero-posterior direction than transversely; separated by rather more than twice their diameter. Antennae short. Setigerous foveolae 2 + 2.

Collum less strongly narrowed down the side than, *e. g.*, in *T. rubrocinctus*, the anterior side of the lower, narrower, part being convex while the corresponding caudal side is concave, further dorsad becoming convex.

Segmental sutures distinct throughout, not at all or scarcely wavy at level of pore. Segments not at all constricted, prozonite and metazonite being at the same level. Both prozonites and metazonites smooth.

In the gonopods the median plate the proximal arms are widely divergent, mesally nearly horizontal, curving more dorsad of ectal distally, each arm extending out about the base of the gonopod to its ectal side; median division short, distally rounded, curved forwards between the gonopods.

Number of segments uncertain since the caudal end of the body is missing; thirty segments are present.

Diameter (male), 2.6 mm.

638. TRIGONIULUS CAERULEOCINCTUS, sp. nov.

TYPE.— M. C. Z. 4,779. Ternate (Thomas Barbour).

The free part of prozonites are bluish, this color also extending a little caudad of the segmental suture, the covered zone fulvous; remaining part of metazonites ferruginous or somewhat reddish; in the caudal region an appearance of darker spots along the pore-level. Legs light ferruginous. Anal segment dark.

Antennae short. Eyes small, about two and a half times their diameter apart. Setigerous foveolae as usual.

Collum narrowed down side a little less than usual, the lower end well rounded ventrally, the anterior margin convex, the posterior straight or for a short distance slightly concave.

Transverse sutures very distinct throughout; only slightly waved at level of pore. Segments not constricted. Metazonites smooth; prozonites striate laterally and beneath, above with some coarse puncta in front of the suture.

Anal scutum about equalling valves, rounded behind, smooth. Valves smooth, not marginate.

The median plate of the male gonopods resembles that of *T. eurabdotus*, the arms extending out widely about the bases of the gonopods as in that species; but the distal part is much shorter, distally truncate and not bent caudad at tip; the coxal plates of the anterior gonopods shorter, not surpassing the median plate, truncate across distal ends.

Diameter (male), 2.5 mm.

639. TRIGONIULUS RUBROCINCTUS, sp. nov.

TYPE.— M. C. Z. 4,777. Amboina (Thomas Barbour).

Prozonites black, the metazonites red; anal segment black; collum and head dusky, the head with small lighter areolations on each side mesad of eye and antenna and across the vertex. Antennae and legs yellow.

Antennae short and thick. Eyes subrotund with mesal side considerably flattened; separated by about twice their diameter. Setigerous foveolae 2 + 2.

Collum strongly narrowed down the side as usual, both the anterior and the posterior margin of the narrow part a little concave; the lower end well rounded. Margined from lower end up to level of eye in front.

The transverse suture on segments very distinct throughout, bowed semicircularly about the pore. Each segment strongly constricted just in front of the pore, the metazonite rising conspicuously above the depressed caudal portion of the prozonite. Metazonite smooth, but the prozonite marked with deep longitudinal sulci both across dorsum, and down the sides and beneath.

Anal scutum rounded caudally; equalling the valves.

Median plate of the gonopods, very small, with the anterior process especially small and triangular; much exceeded by the widely diverging proximal arms which lie against the cephalomesal side of the anterior gonopods proper.

Number of segments, forty-five.

Diameter (male), 2.5 mm.

640. TRIGONIULUS BARBOURI, sp. nov.

TYPE.— M. C. Z. 4,775. Dutch New Guinea. Manokwari (Thomas Barbour).

Antennae short and thick. Eyes widely separated, subtriangular but with the sides convex and the angles more or less rounded.

Collum in form and relations as in *T. lumbricinus.*

The transverse suture of segments itself indistinct but its position clearly defined by a series of puncta. The metazonite rather strongly elevated above the prozonite. Both divisions of segment smooth, thus differing very obviously in appearance from *T. lumbricinus.*

Anal scutum a little exceeding the valves.

Number of segments, forty-seven.

Length (male), near 37 mm.; width, 3.5 mm.

In coloration somewhat similar to *T. lumbricinus* (Gerstaecker), but the antennae and legs are fulvous. The distal part of the anal scutum and the collum dusky.

It is most readily to be distinguished by the structure of the male gonopods, the median plate of which is decidedly smaller and especially narrower than in *T. lumbricinus* with the two proximal angles extending caudad as arms subparallel with each other, much less divergent than in the genotype, and enclosing between them a deep cavity, while the distal part is subtriangular with the end rounded.

641. TRIGONIULUS TAHITIANUS, sp. nov.

TYPE.—M. C. Z. 4,853. PARATYPES.—M. C. Z. 4,854, 4,879. Society Islands: Tahiti.

Color greyish to bluish black with the caudal border of metazonites ferruginous, the ferruginous stripe widening down the lower part of the sides. Collum solid black or nearly so excepting a narrow ferruginous border. Anal segment dark, bluish black, excepting a narrow caudal border of ferruginous, to the scutum and the mesal borders of the valves also sometimes ferruginous or this color suffusing the entire surface. Antennae and legs ferruginous.

Surface of head smooth and shining. Sulcus fine, widely interrupted in the frontal region. Eyes not fully twice their diameter apart; subtriangular but with all the angles rounded; ocelli in seven series, *e. g.*, 5, 7, 8, 7, 6, 4, 2. Antennae short, reaching only to caudal edge of the collum.

Collum strongly narrowed down each side as usual, the caudolateral corner rectangular, the anterior one rounded. Lower and anterior border up to level of eye strongly margined, no striae above the deep margining one.

Second tergite extending but slightly below level of the collum, flattened beneath. Segments most with obvious furrows along position of the suture, this marked above and part way down the side below the pore with a series of horseshoe-shaped impressions. Metazonites below with the usual striae, these sparser and shorter dorsad. Second and several succeeding prozonites with numerous complete cross-striations over the dorsum, there the continuation of oblique striolations below level of pore. Caudally these break up into shorter curved marks, the latter soon becoming very short, sparse, and punctiform, while the prozonites in the posterior region appear almost wholly smooth and unmarked.

Anal segment smooth and shining. Scutum equalling the valves. The latter strongly margined.

Number of segments, forty-eight or forty-nine.

Width (female), 3.1 mm.

PHAGOSTROPHUS, gen. nov.

Lacking pads on tarsi of anterior legs of male. Most closely related to Sympastrophus in structure of male gonopods. Anterior median plate with distal tongue obviously angulate on each side, somewhat diamond shaped with distal end narrowly rounded, to elliptic instead of being broad and deeply incised. Coxal piece of anterior gonopods broad, broadly articulating distally with the distal division which extends well beyond it. Second division broad throughout, a ridge rising at mesal edge distad and becoming free as a distinct process much as in Sympastrophus but with no distinctly separated rounded joint ectad of the region of this process.

GENOTYPE.— *P. pertinens*, sp. nov.

642. PHAGOSTROPHUS PERTINENS, sp. nov.

TYPE.— M. C. Z. 4,921. PARATYPES.— M. C. Z. 4,922, 4,923. Solomons: Fulakora (W. M. Mann).

General color deep greyish brown to grey with darker posterior border to somites, the annulus enclosing a little in front of margin a much deeper colored narrow stripe or line behind which the border is often reddish while a lighter line may precede it. Legs brown to light ferruginous.

Sulcus of head very widely interrupted in median region. Setigerous foveolae 2 + 2. Lower margin very characteristic, the two sides straight, thickened and strongly chitinous, meeting in an obtuse angle in the middle whence they curve dorsad a little but form no distinctly set off median sinus; median teeth fused into a single plate crossing the angle. Antennae clavate, very short.

Collum nearly attaining lower level of second tergite which is slightly concavely excavated beneath. Lower end of collum narrowly rounded.

Suture of segments not strong, straight opposite the pore or sometimes widely curved. Caudal margin of tergites opposite pore often decidedly convexly bowed with an obtuse emargination part way down side from pore and sometimes one above pore. Dorsally the caudal margin also often obviously sinuate. On the sides segments crossed by numerous very fine, closely arranged beaded striae which on prozonite tend to branch and to rise dorsad a little. Above level of pore the fine surface of prozonite is densely marked with small horseshoe-shaped impressions with concavity caudad; the lines from some of these cross over the anterior part of metazonite; across dorsum the suture indicated merely by a shallow depression.

Anal tergite exceeded by the valves. The latter not margined or compressed; smoothly rounded.

Number of segments (male type), fifty-two.

Length (male), 37 mm.; width, 2.6 mm.

643. PHAGOSTROPHUS WAIAINUS, sp. nov.

TYPE.— M. C. Z. 4,942. PARATYPES.— M. C. Z. 4,943. Solomons: Wai-ai (W. M. Mann).

Very similar in general appearance to the preceding species. It differs in the form of the distal tongue of the anterior median plate of the male gonopods, this having the sides evenly convex instead of angulate and the distal end broadly rounded so as a whole to appear broadly spatulate instead of diamond shaped. Telopodite of anterior gonopods differing obviously in having the distomesal process larger, extending well distad of end of outer part instead of being exceeded by the latter and distally more strongly bent ectad.

In *P. pertinens* (male) the second tergite extends rather more below level of collum than in the present form where it extends but slightly below it. In the present species the repugnatorial pores are situated notably farther dorsad; the suture is laterally more clearly impressed and runs closer to the pore which it touches, often curving a little about its upper portion so as to bring the dorsal part of suture in line with it whereas in the other species the pore is well removed. The striae of the lower and lateral region up to and a little above pore are similarly dense but they are finer, more lightly impressed, and in posterior region in particular may appear obscure toward and above the pore.

Coxal processes of anterior legs of male larger.

Number of segments, fifty-six.

Width (male type), 3.2 mm., being more robust than *P. pertinens.*

644. PHAGOSTROPHUS WAINONENSIS, sp. nov.

TYPE.—M. C. Z. 4,918. PARATYPES.—M. C. Z. 4,949, 4,924. Solomons: Wainoni Bay, Pamua (W. M. Mann).

With color-pattern as in the preceding species. It is more robust than *P. pertinens*, agreeing rather with *waiainus* in this regard. The pores, as with *P. pertinens*, are lower on the side than in *waiainus*. In *P. pertinens* also the suture does not curve at all about the pore, being essentially straight; but it is closer to the pore than in *pertinens*, ordinarily coming in contact with its edge and often bending a little toward it. Striations of somites essentially as in the genotype.

Most readily recognized by structure of the gonopods. The tongue of the anterior median plate is broader than in the genotype; it is similarly obtusely angulate on each side but is less narrowed distad, being somewhat intermediate in form between those of the two preceding species. The mesodistal process of telopodite of anterior gonopod longer than in *P. pertinens,* rising a little above level of outer part, and notably stouter, broader especially distally where it extends a little farther ectad; it rises less relatively to the outer part than in *P. waiainus*.

Number of segments, fifty-three or fifty-four.

Width (male type), 3.2 mm.; of female, to 3.5 mm.

645. PHAGOSTROPHUS HETEROPUS (Silvestri).

Trigonoiulus heteropus Silvestri, Ann. Mus. civ. Genova, 1899, **39**, p. 444, fig. 6–8.[1]

LOCALITY.— New Guinea: Wa Samson.[1]

646. PHAGOSTROPHUS FASCIOLATUS (Silvestri).

Trigoniulus heteropus var. *fasciolatus* Silvestri, Ann. Mus. civ. Genova, 1899, **39**, p. 445, fig. 9, 10.[1]

LOCALITY.— New Guinea: Ramoi.[1]

647. PHAGOSTROPHUS DEMISSUS (Silvestri).

Trigoniulus demissus Silvestri, Ann. Mus. civ. Genova, 1899, **39**, p. 446, fig. 11–13.[1]

LOCALITY.— New Guinea: Marsinam.[1]

648. PHAGOSTROPHUS TACHYPUS (Pocock).

Trigoniulus tachypus Pocock, Weber's Reise, 1894, **3**, p. 397, pl. 22, fig. 29.[1]

LOCALITY.— Saleyer.[1]

649. PHAGOSTROPHUS KARYKINUS (Attems).

Trigoniulus karykinus Attems, Abhandl. Senckenb. gesellsch., 1897, **23**, p. 511, pl. 24, fig. 44–46.[1]

LOCALITIES.— Halmaheira: Soah Konorah. Batjan.[1]

650. PHAGOSTROPHUS VELOX (Carl).

Trigoniulus velox Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 271, pl. 11, fig. 1–4.[1]

LOCALITIES.— Aru Islands: Dobo, Wangil, Durdjela, Wammer, Samang and Sungi Panua on Wokam, Seltutti, Sungi Kolobobo in Kobroor.[1] Kei Islands: Kei-Dulah.[1]

651. PHAGOSTROPHUS HEMMORHANTES (Pocock).

Spirobolus haemorrhantes Pocock, Ann. mag. nat. hist., 1893, ser. 6, **11** p. 141, pl. 9, fig. 12, 12a.[1]

Trigoniulus haemorrhantes Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 272, pl. 11, fig. 5–9.[2]

LOCALITIES.— Kei Islands: Great Kei, Langgur,[2] Kei-Dulah,[1, 2] Elat.[2]

AROSTROPHUS, gen. nov.

Very close to Phagostrophus but mesal distal process of telopodite of anterior gonopods much exceeding the outer part over which it may bend ectad, and distally subclavately expanded, the distal end oblique. Anterior median plate long, in length equalling or approaching coxoid of anterior gonopods.

GENOTYPE.— *A. mertoni* (Carl).

652. AROSTROPHUS MERTONI (Carl).

Trigoniulus mertoni Carl, Abhandl. Senckenb. gesellsch., 1912, **34**, p. 273, pl. 11, fig. 10–13.[1]

LOCALITIES.— Aru Islands: Dabo-Wangil forest, Wammer, Wardakau, Maikoor.[1]

653. AROSTROPHUS KLOSSI (Hirst).

Trigoniulus klossi Hirst, Trans. Zool. soc. London, 1914, **20**, p. 332, fig. 19A.[1]

LOCALITY.— Dutch New Guinea: Utakwa River.[1]

ZYGOSTROPHUS, gen. nov.

Differing from Spirostrophus, *e. g.* in the gonopods of the male. In the anterior gonopods the anterior or coxal piece is elongate and narrowed distally to a slender cornuate process, whereas the distal or caudal division, also elongate, is distally broad and erect. In Spirostrophus the coxal plate is distally much broader, exceeding in width the telopodite which, on the contrary, narrows to a slender cornuate process which curves mesad. The median plate has the distal or middle part much more elongate, not trapeziform, and distally acute.

GENOTYPE.— *Z. ferruginopes*, sp. nov.

654. ZYGOSTROPHUS FERRUGINOPES, sp. nov.

TYPE.— M. C. Z. 4,794. PARATYPES.— M. C. Z. 4,795, 4,798. Queensland: Kuranda, 2000 ft. (H. L. Clark, W. M. Wheeler).

In this species the median plate is most like that of *Z. digitulus* Brölemann in its form; the median process is similarly long but is less parallel-sided, narrowing moderately to a little beyond the middle and then a little widening into a somewhat spatulate end-region with acuminate tip; the outer (basal) lobe of each arm is much broader and projects more freely, the arch formed by the arms is rather longer with the arms less divergent above their bifurcation but similarly curling about the bases of the gonopods above. The coxal piece of the anterior gonopods distad of its middle narrowing to a slender process in line with its mesal border, the outer edge strongly sloping, the mesal continuing its even course, the process distally curving a little mesad. The telopodite is elongate and narrowed distad but is distally much broader than the anterior or basal segment, parallel sided, not acuminate as in *Z. digitulus,* barbed on ectal side near apex and again near middle of length. Posterior gonopod in general similar to that of *Z. digitulus* but much less deeply incised distally on ectal side.

The prozonites vary from deep brown to black in color; the metazonites are red. Antennae and legs bright ferruginous. Anal segment and the head and collum lighter, grey-brown, the collum margined with red.

Sulcus of head distinct across vertex and below, absent from frontal region. Eyes trapeziform with the base caudad, the latter convex but other sides straight; somewhat less than twice their diameter apart; 6, 7, 7, 7, 6, 4, 3. The first four joints of the antennae are nearly glabrous, the fifth and especially the sixth hairy.

Lower wing of collum with both the anterior and the caudal margin slanting to its angle; lower edge oblique, rising anterodorsad, a little incurved; margination as usual; surface strongly coriarious in its markings. Sutures well marked, straight, removed from the pore opposite which is not curved. On the anterior segments the prozonites are marked with transverse striae both above and below, longitudinal striae occurring only on the metazonites below, the latter above simply coriariously roughened. Farther caudad the prozonites are marked for some distance below the level of each pore with a series of striae rising obliquely from the suture and above the suture with a series of circular and horseshoe-shaped impressions on the line of the suture. The metazonites striate only beneath. The dorsal surface of both zones strongly roughened with irregularly branching impressed lines generally coriarious in form, but showing a tendency, especially on the metazonites, for a longitudinal arrangement to prevail.

Anal scutum with punctations and impressed lines as on other segments; rounded behind, not equalling the valves. Valves with surface similar; mesal borders elevated.

Of the processes of the anterior legs in the male, the most anterior or those of the third legs are largest, drawn out distally to a slender pointed tip.

Number of segments, fifty-seven.

Diameter (male), 4.5 mm.

655. Zygostrophus alterans, sp. nov.

Type.— M. C. Z. 4,796. Paratype.— M. C. Z. 4,797. Queensland: Toorwary near Brisbane (W. M. Wheeler).

In the character of its gonopods approaching *Z. digitulus* (Brölemann) more nearly than *ferruginopes*, the genotype. The median plate has the sides more evenly curving; it is distally more prolonged and the tip is set off as a more slender process which equals or slightly surpasses the processes of the coxal plates. The narrowing distad of the coxal plate of the anterior gonopods is much less abrupt than in *Z. digitulus*. The distal part of the telopodite is broad, angular at apex and with an angular ectal projection nearly as in *Z. digitulus*.

The general color is blue-black with the caudal borders of metazonites red; small black spots over part of the pores, labial border fulvous. Antennae and legs bright ferruginous.

Head with sulcus, eyes, and antennae nearly as in *Z. ferruginopes*.

Collum of male differing from that of the genotype in having the lower angle more acute, the lower margin evenly continuous with the anterior one.

In the anterior region the segments are much as in the genotype, with transverse striae similarly developed but surface in general less roughened. On some of the anterior segments the prozonites are marked with curved crescentic to horseshoe-shaped marks which become smaller caudally, passing into small punctiform impressions. In the posterior region the segments above almost wholly smooth.

The network of impressed lines on anal segment very fine and obscure. Scutum rounded, not surpassing the valves. The latter with mesal margins elevated.

In the anterior legs of the male the coxal processes much less pointed than in *Z. ferruginopes;* those of the third legs narrowest, distally rounded; the following ones subquadrate in outline, being distally truncate.

Number of segments, fifty-seven or fifty-eight.

Diameter (male), 4.5 mm.

656. ZYGOSTROPHUS URALLANUS, sp. nov.

TYPE.— M. C. Z. 4,799. PARATYPES.— M. C. Z. 4,800. New South Wales: Salisbury Court near Uralla (W. M. Wheeler).

Presenting a very different appearance from the other species because of the broader and lighter pale stripes, each pale stripe, testaceous of a dilute ferruginous cast, embracing the entire metazonite and dorsally often encroaching on the prozonite; prozonite black, becoming lighter down the sides so that the pleural region appears lighter than the dorsum; covered zone also light colored. Anal segment, collum and head blackish or greyish black, the collum narrowly margined with the fulvoferruginous and the anal scutum and valves also paler caudally. Legs dilute ferruginous.

Sulcus across vertex and below as usual. Vertex strongly, finely roughened with several impressions shagreened. Eyes more strongly narrowed cephalad than in *Z. ferruginopes,* fully twice their diameter apart.

The lower edge of the collum short, rising obliquely and meeting the anterior edge at an angle as in *Z. ferruginopes* but a little convex, not incurved as in the latter form.

Metazonites longitudinally striate below in the usual manner, these striae extending only half way up the side to the pore, above them a series of impressed areas along the suture. The prozonites on the side with a dense network of very fine curved lines, running obliquely or vertically; prozonites dorsally with numerous circular and horseshoe-shaped impressions which decrease in size from the suture.

Valves exceeding the anal tergite; mesal borders strongly elevated.

In the gonopods the median plate has its distal piece formed precisely as in *Z. digitulus* but proportionately longer and the sides not so strongly bulging at proximal end. The coxal plates of the anterior gonopods have the tips of their cornuate processes covered by the distal end of the median plate. The posterior or telopodite division of the anterior gonopods of a very different form, the distal end not angular but truncate and expanded into a cap-like top; the lower ectal angular projection longer and more retrorse.

The coxal processes of the third legs in the male clavately enlarged, the processes of the following legs small almost obsolete.

Number of segments, fifty-five.

Width of male type, 4.5 mm.

657. ZYGOSTROPHUS DIGITULUS (Brölemann).

Spirostrophus digitulus Brölemann, Records Austr. mus., 1913, **10**, p. 113, pl. 15, fig. 27–28, pl. 16, fig. 30–32.[1]

LOCALITY.— Queensland: Condamine.[1]

658. ZYGOSTROPHUS TARGIONI (Silvestri).

Trigoniulus targioni Silvestri, Bull. Soc. ent. Ital., 1897, **29**, p. 229.[1]

LOCALITY.— Queensland: Cairns.[1]

SYMPASTROPHUS, gen. nov.

This genus is undoubtedly close to Spirostrophus with which it agrees, while differing from Trigoniulus, in lacking pads on the tarsi of the anterior feet of the males. It is segregated from Spirostrophus on the basis of differences in the male gonopods. The median plate of the gonopods is distally deeply incised. The anterior gonopods are especially characterized by having the femur extended into a conspicuous process on the mesal side of a distinctly separated terminal joint, this process curving ectad. In the posterior gonopods below the ordinary processes there is a straight slender styliform process that seems to convey the seminal duct, though this is not wholly certain.

GENOTYPE.— *S. manokwaranus*, sp. nov.

659. SYMPASTROPHUS MANOKWARINUS, sp. nov.

TYPE.— M. C. Z. 4,776. Dutch New Guinea: Manokwari (Thomas Barbour).

Posterior part of zonites red, the anterior region above brown to testaceous with a cross stripe, often interrupted at the middorsal line, dusky to black and the lower part of the sides and venter testaceous to fulvous. Anal scutum dark. Legs and antennae red.

Head smooth. Sulcus widely interrupted in the frontal region. Antennae long, reaching to the caudal edge of the second tergite. Eyes large, only about their diameter apart. The cardo of the gnathochilarium much more strongly produced than in *Trigoniulus lumbricinus*.

Collum with lower angle more acute than in *T. lumbricinus*, its anterior edge straighter.

Transverse sulcus curved at level of the pore. The principal markings of the segments dorsally are short, curved impressions in a band just in front of the position of the suture, these much fewer than in *T. lumbricinus* and absent excepting in the narrow band mentioned, no coarse punctae. Segments strongly longitudinally striate beneath and part way up the side.

Anal scutum smooth and shining, much exceeded by the valves. Valves with borders compressed and elevated but not set off by a marginal furrow; border crossed by distant fine sulci and also some fine vertical sulci across upper part of each valve.

Median plate of gonopods with branches widely diverging, broad, curving about bases of gonopods as in Acanthiulus and Spirostrophus; mesal process or free portion of outer branch farther dorsad or toward end of arm than usual in Spirostrophus, broad and thin, short. Femur of anterior gonopods prominently ridged along mesal side and extended on this side distad as a conspicuous rounded prominence along the side of the tibial lobe toward which it curves. The tibial lobe short, rounded, without angles or processes. In the posterior gonopods there is at the tip a triangular plate and below this a thin plate-like extension showing a median spine-like rib. From a rounded lobe proximad of this extends a slender acute needle or style which seems to contain the terminal part of the seminiferous duct but this could not be ascertained with entire certainty.

Number of segments, fifty-four.

Width, 4.5 mm.

The following species were inadvertently omitted from the manuscript as prepared for publication.

PLATYRRHACUS SARASINORUM Carl.

Rev. Suisse zool., 1912, **20**, p. 144, pl. 5, fig. 17.[1]

LOCALITY.— Celebes: Uangkahulu-Tal.[1]

PLATYRRHACUS ALATUS Carl.

Rev. Suisse zool., 1912, **20**, p. 146, pl. 5, fig. 16 and text fig. 11, 12.[1]

LOCALITY.— Celebes.[1]

PLATYRRHACUS ZONATUS Carl.

Rev. Suisse zool., 1912, **20**, p. 149, pl. 5, fig. 9.[1]

LOCALITY.— Kabaena Island, south of Celebes.[1]

PLATYRRHACUS ARIETIS Carl.

Rev. Suisse zool., 1912, **20**, p. 151, pl. 5, fig. 10, 11.[1]

LOCALITY.— North Celebes: Matinangkette.[1]

Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec.	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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Scolopocryptops miersi fijiensis								⊕																																			
Otostigmus glaber								⊕																																			
tuberculatus																														—													
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moluccanus																																											⊕
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proponens																	⊕																										
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pamuanus																	⊕																										
Rhysida kurandana																														⊕													

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carinulata																														+			—									—	
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immarginata								+																																		—	
Ethmostigmus australianus																											⊕																
waiainus																	⊕																										
platycephalus				—						—	—																						—	—		—							—
pygomegas																																	—										
granulosus										—							—																—	—									
rubripes																	—										—	—	—	+	—		+										
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venenosus																																										—	—
Asanada brevicornis																																	—										
Cupipes papuanus																																	—										
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inermis																														—													
impressus																											—										—						
propulsus																	⊕																										
Colobopleurus inopinatus																													—														
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laevipes																					+																						
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marginatus																											—					—											
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rubriceps																				—		+								—		—											
brevispinatus																											—			—		—											
distinguendus																												—	—	—													
westwoodi																									+		—			—													
foecundus																									—		—			—		—											
strigosus																												—	—														
violascens																				—		+			—	—				—													
turneri																													—														

Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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Cormocephalus turneri yalgooensis																													—														
michaelseni																													—														
tricuspis																														—													
hartmeyeri																													—														
Hemicormocephalus novae hollandiae																													—														
Scolopendra morsitans			—	—	—			+	—		—		—			—						+					—	—	—	—			+		—	—	—			—	—	—	—
subspinipes	—		+	+	+			+	+													+											+			—	—			—		—	—
mutilans																														+			—										
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viridis																													—														
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flavipes																													—														
metuenda																																	—										
coeruleoviridis																																—											
Arthrorhabdus mjöbergi																													—														
Azygethus atopus								⊕																																			
Gonibregmatus plurimipes								⊕																																			
fijianus								⊕																																			
anguinus																																		—									
insularis																																									—		
Tuoba curticeps																	⊕																										
Adenoschendyla fijiensis								⊕																																			
Eucratonyx hamatus																																		—									
Ballophilus australiae																														⊕													
fijiensis								⊕																																			
paucipes								⊕																																			
Orphnaeus brevilabiatus	—			—				+			—		—				—												—							—	—			—		—	
Zelanion dux																						⊕																					
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Pachymerinus australis																											—																
froggatti																											—			+													
Geomerinus curtipes																											—			—													

Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Tasmanophilus tasmanianus																									⊕																		
Pachymeroides mimeticus																									⊕																		
alter																									⊕																		
Mesoleptodon laetus																						⊕																					
Philogeonus zelanicus																						⊕																					
Philosogus oligus																											⊕																
Zelanophilus wheeleri																						⊕																					
Pachymerellus zygethus																									⊕																		
Sogophagus serangodes																																											
Geophilus xylophagus																						—																					
duponti																											—																
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provocator																						—																					
?concolor																											—		—	—													
?antipodum																						—				—																	
?sydneyensis																											—																
?opinatus																										—	—					—											
?spenceri																						—																					
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?morbosus																						—																					
?polyporus																																	—										
Pachymerium perforatum																														—													
schauinslandi																						—	—																				
Maoriella macrostigma																						—																					
aucklandica																						—																					
Polygonarea wheeleri																														⊕													
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imparata																													—														
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conifera																													—														
Schizoribautia aggregatus																											—																
Mecistocephalus nigriceps								+									+																										
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kurandanus																														+													
simplex																														+													
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lifuensis																			—																								

Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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Mecistocephalus maxillaris																																	—										
modestus																																	—										
insularis																																											—
castaneiceps											—																																
spissus	—																																										
tahitiensis				—				—																			—		—	—			—										
Megethmus ferrugineus																						—																					
Dasyptyx solomonensis																	⊕																										
gigas																																	—										—
subgigas																																	—										
uncifer																																	—										
Ectoptyx labasanus								⊕																																			
kabasanus								⊕																																			
turucanus								⊕																																			
somonus								⊕																																			
siaronus								⊕																																			
Lamyctes tasmanianus																									⊕																		
zelandicus																						⊕																					
navaianus								⊕																																			
munianus								⊕																																			
emarginatus																						—																					
fulvicornis																													—														
hawaiiensis	—																																										
africanus																													—														
neozelandicus																						—																					
chathamensis																							—																				
kermaderensis																								—																			
Lamyctinus coeculus	—																										—																
Wailamyctes trailli																						—																					
halli																						—																					
Paralamyctes validus																						⊕																					
dubius																						—																					
Pleotarsobius heterotarsus	—																																										
Henicops maculatus																						+			—	—	+																
dentatus																													—														
oligotarsus																													—														
?impressus																						—																					
Haasiella insularis																						—																					

Ladrone	Pelew	Carolines	Solomons		New Hebrides	New Caledonia	Loyalty	Lord Howe		New Zealand	Chatham	Kermadec.	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia		New Guinea	Bismarck Archipelago		Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec.	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Tasmanobius relictus																									⊕																		
Dichelobius flavens																													—														
Anopsobius neozelanicus																						+																					
Australobius scabrior																														⊕													
loriae																																	—										
Walesobius sydneyensis																											—																
Lithobius argus																						—																					
Kauabius hawaiiensis	—																																										
Bothropolys oahuanus	—																																										
Ethopolys rugosus	—																																										
Cermatobius martensi																																							—				
Craterostigmus tasmanianus																									—																		
Ballonema gracilipes																																	—										
Parascutigera dahli																																		—									
Podothereua insularum																																		—									
Allothereua maculata																										—	+		—	—				—									
?simplex																											—	—															
?lesueri																														—		—											
?smithi																						—																					
Gonethina fijiana								⊕																																			
Diplacrophor nitens																	⊕																										
Scutigera ?straba	—																																										
?hispida																—																	—										
Hanseniella neozelanica																						⊕																					
caldaria																						—																					
Tasmaniella hardyi																									⊕																		
Scutigerella indecisa																													—														
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burrowesi																											—																
Polyxenus hawaiiensis	—																																										
Monographis schultzei																													—														
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Cyliosoma kurandanum																														⊕													
pachygon																														⊕													
targioni																														—													

	Pelew	Carolines	Solomons		New Hebrides	New Caledonia	Loyalty	Lord Howe		New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia		New Guinea	Bismarck Archipelago		Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Cyliosoma froggatti																											—																
unicolor																														—													
sennae																											—			—													
sjöstedi																														—													
angulatum																														—													
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albertsi																														—													
Procyliosoma leiosoma																						—																					
leae																									—																		
tasmanicum																									—																		
tuberculatum																						—																					
delacyi																						—																					
striolatum																						—																					
novae zelandica																						—																					
aurivilli																														—													
Castanotherium celebense																																										—	
distinctum																																										—	
suspectum																																										—	
laeve																																										—	
criniceps																																										—	
pilosum																																										—	
ornatum																																										—	
decoratum																																										—	
boëtonense																																										—	
sparsepunctatum																																										—	
stellatum																																										—	
?amythra																																											—
Zephronia ?larvalis																														—													
Nesoglomeris sarasinorum																																										—	
kirropeza																																										—	
eremita																																										—	
alticola																																										—	
Siphonotus medius									⊕																																		
fijiensis									⊕																																		
solitarius									⊕																																		
senior									⊕																																		
frater									⊕																																		

Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Siphonotus ethoceps								⊕																																			
solomonensis																	⊕																										
socius																	⊕																										
attanus																	⊕																										
curticeps																	⊕																										
flavomarginatus																													—														
brevicornis																										—																	
bivittatus																				—																							
setosus																																	—										
Rhinotus michaelseni																													—														
celebensis																																										—	
trichocephala																																										—	
Siphonethus enotatus																						⊕																					
bellus																						⊕																					
Siphonophora atopa								⊕																																			
zelandica																						⊕																					
nansoriana								⊕																																			
dux																	⊕																										
obscurior																	⊕																										
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vittata																																								—			
loriae																																		—									
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longirostris																																		—									
scolopacina																																		—									
Diopsiulus parvulus																																		—									
Schedotrigona histrix																						—																					
smithi																						—																					
Huttoniella trisetosa																						—																					
Australiosoma transverse taeniatum																														—													
bifalcatum																														—													
froggatti																											—																
rainbowi																											—																
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Atropisoma horvathi																																		—									
insulare																																		—									

Pelew	Carolines	Solomons		New Hebrides	New Caledonia	Loyalty	Lord Howe		New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia		New Guinea	Bismarck Archipelago		Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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Atropisoma elegans																													—													
Eustrongylosoma fasciatum																																	—									
insulare															—																											
transversefasciatum																													—													
Australodesmus divergens																													⊕													
Zelanodesmus rotornanus																					⊕																					
australianus																										⊕																
Antichiropus variabilis																												—														
nanus																												—														
minimus																												—														
whistleri																												—														
monacanthus																												—														
fossulifrons																												—														
sulcatus																												—														
Notodesmus scotius																								⊕																		
Akamptogonus beauforti																																										—
Orthomorpha lampra							⊕																																			
coarctata	+			—	+			+	—		—																								—	—			—	—	—	—
weberi																																									—	
aspera																													—													
dubia																													—													
gracilis	—			+	+			—	—													+																				
vinosa																																							—			
impressa																																—										
loriae																																—										
gervaisi																										—			—													
Tricladosoma novarrae																					—																					
triaina																												—														
Serangodes strongylosomoides																					—																					
Cylindrodesmus villosus										—											—																					
strubelli																																										—
Strongylosoma nigrum																										⊕																
robustior																										⊕																
rubrimarginatum																										⊕																
quaesitum																										⊕																
signatum																																			—							—
kukenthali																																									—	
hetairon																																									—	

Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Strongylosoma rubripes																														—													
semoni																														—													
innotatum																											—																
elegans																														—													
luxuriosomum																																	—										
maculatum																																	—										
albipes																																	—										
oenologum																																	—										
sanguineum																																	—										
versicolor																																	—										
longesignatum																																	—										
orthogona																																	—										
ensiger																						—																					
nigrovirgatum																										—																	
Phlyctodesmus myrmecophor								⊕																																			
Fijiodesmus suprenans								⊕																																			
Solomonosoma manni																	⊕																										
didymus																	⊕																										
maius																	⊕																										
nigrum																	⊕																										
confirmans																	⊕																										
Mimosoma setosum																	⊕																										
reductum																	⊕																										
glabrum																	⊕																										
sequens																	⊕																										
gracile																	⊕																										
Somethus fuscipes																															⊕												
Antisoma wheeleri																						⊕																					
Prionopeltis dasys								⊕																																			
clarus								⊕																																			
haasti																						—																					
bicolor																						—																					
Pseudoprionopeltis cinereus																						—																					
martini																						—																					
Polydesmus ?worthingtoni																						—																					
Tasmanodesmus hardyi																									⊕																		
Lissodesmus modestus																									⊕																		
Paurodesmus acutangulus																													⊕														

Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Opisthoporodesmus obtectus																																—										
Asphalidesmus leae																								—																		
Agathodesmus steeli																										—																
Icosidesmus hochstetteri																					—																					
olivaceus																					—																					
variegatus																					—																					
schenkeli																					—																					
suteri																					—																					
nanus																					—																					
Pachyurus fasciatus																																										—
xestaloma																																									—	
erythrokrepis																																									—	
tricuspidatus																																										—
solomonis																—																										
Platyrrhacus atopogon																																⊕										
ancylogon																																⊕										
mimus																⊕																										
gonethus																⊕																										
fallens																⊕																										
schistogon																⊕																										
katantes																																—										
tuberosus																																		—	—							
margaritatus																																—										
victoriae																																—										
sanguineus																																									—	
woodfordi																—																										
diontodesmus																—																										
concolor																																										—
complicatus																																										—
annectens																																										—
haplopus																																										—
georgos																																										—
amauros																																										—
amblyodon														—																												
pergranulosus																																—										
insularis																																										—
moluccensis																																										—
pergranulatus																																									—	

Ladrone	Pelew	Carolines	Solomons		New Hebrides	New Caledonia	Loyalty	Lord Howe		New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia		New Guinea	Bismarck Archipelago		Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Platyrrhacus dadayi																																	—										
beauforti																																											—
mediotaeniatus																																											—
puliger																																											—
Aipotropis atopus								⊕																																			
insignis								⊕																																			
varians								⊕																																			
lasemanus								⊕																																			
Pilochilus cynephor								⊕																																			
pallidior								⊕																																			
Atopodesmus parvus																									⊕																		
Plusiodesmus felix																																	—										
Lophodesmus pusillus																																								—			
lamprus								⊕																																			
Treseolobus conformans								⊕																																			
inconspicuus								⊕																																			
Euporodesmus solitarius								⊕																																			
Julus fallax																						+			+																		
luscus	—																																										
Dimerogonus ater																						⊕																					
kaorinus																						⊕																					
orophilus																											—																
insulanus																						+																					
aveburyi	—																																										
sharpi	—																																										
shipleyi	—																																										
carpenteri	—																																										
beddardi	—																																										
pococki	—																																										
sedgwicki	—																																										
sinclairi	—																																										
lankesteri	—																																										
harmeri	—																																										
perkinsi	—																																										
koebelei	—																																										
Eumastigonus kaorinus																						⊕																					
fasciatus																						⊕																					
distinctior																						⊕																					

Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Eumastigonus parvus																						⊕																					
maior																						⊕																					
Euethogonus hardyi																									⊕																		
Atelomastix albanyensis																													—														
nigrescens																													—														
Samichus decoratus																													—														
Amastigogonus tasmanianus																									—																		
Nesocambala fijiana								⊕																																			
lineata								⊕																																			
scabriuscula								⊕																																			
solomonica																	⊕																										
personata																	⊕																										
Julomorpha flabelligera																														—													
podenzanae																														—													
pallipes																														—													
Hypocambala helleri																																										—	
Agastrophus orientalis																																										—	
Trichocambala sollasi											—																																
Podykipus collinus																													—														
leptoiuloides																													—														
Dinocambala ingens																													—														
Cambalopsis nordquisti																																										—	
Thyropygus javanus																																											—
Rhynchoproctus proboscideus																																					—						—
Spirostreptus ?lepturus								—																																			
?striatus																						—																					
?maritimus																														—													
?impressopunctatus																														—													
Rhinocricus perditus																														⊕													
Cladisocricus falcatus																														—													
scobinula																														—													
?consimilis																														—													
Salpidobolus meyeri																																										—	
Proporobolus bicornis								—																																			
quintiporus																																											—
xanthopygus																																											—
pachyskeles																																											—
sennae																														—													—

Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Proporobolus adipatus																																	—										—
beauforti																																											—
Acladocricus solomonus																	⊕																										
styliferus																																										—	
cognatus																																										—	
neglectus																																										—	
filosus																																										—	
setigerus																—																											
mediostriatus																																										—	
pyrrhomola																																										—	
montivagus																																										—	
macassarensis																																										—	
Dinematocricus lugubris																																—											
coeruleolimbatus																														—													
fasciculatus																																—											
brevipes																																—											
opulentus																														—													
crepidatus																																—											
fenicheli																																	—										
caelatus																																	—										
dives																																	—										
dimissus																																	—										
dijunctus																																	—										
loriae																																	—										
variabilis																																					—						
albertisi																																	—										
analis																																	—										
faucium																																	—										
detornatus								—																																			
vogesi																																		—									
punctipennis																																			—								—
signifer								—																																			
decoratus								—																																			
undulatus								—																																			
carinatus								—																																			
callosus															—																												
scrobiculatus																																											—
beccarii																																											—

Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Dinematocricus costatus								—																																			
holosericeus								—																																			
colubrinus								—																																			
pictus								—																																			
lanceolatus																																		—									
biincisus																																		—									
gazellensis																																		—									
flavocollaris																																				—	—						
leucopygus																																				—	—						
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micropygus								—																																			
excavatus								—																																			
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virgatus																																										—	
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moenensis																																										—	
ripariensis																																										—	
gorontalensis																																										—	
annulipes																																										—	
?multistriatus																																										—	
transversezonatus																																										—	

Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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		Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Nine	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
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Spirobolellus rainbowi																											—																
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Plokamostrophus amphelictus																	⊕																										
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gracilis																																	—										
Spirostrophus ambonensis																																										—	—
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	Hawaiian	Marquesas	Paumotus	Society	Hervey	Niue	Tongan	Fijis	Samoa	Union	Ellice	Gilbert	Marshalls	Ladrone	Pelew	Carolines	Solomons	New Hebrides	New Caledonia	Loyalty	Lord Howe	New Zealand	Chatham	Kermadec	Tasmania	Victoria	New South Wales	South Australia	West Australia	Queensland	Northern Territory	Australia	New Guinea	Bismarck Archipelago	Banda	Kei	Aru	Timor	Adenara	Flores	Salayer	Celebes	Moluccas
Trigoniulus orinomus																																											—
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digitulus																														—													
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Sympastrophus manokwarinus																																	⊕										

Bulletin of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE.
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SOME NEW ORDOVICIAN TRILOBITES.

BY PERCY E. RAYMOND.

CAMBRIDGE, MASS., U. S. A.
PRINTED FOR THE MUSEUM.
JULY, 1920.

No. 2.— *Some New Ordovician Trilobites.*

By Percy E. Raymond.

The following brief descriptions of certain new species of trilobites are abstracted from a larger manuscript, the publication of which has been postponed to allow the preparation of adequate illustrations. It has become necessary to use some of these names in another connection, hence this preliminary paper.

Trinucleidae Emmrich.

Trinucleus acervulosus, sp. nov.

Entire test flattened, subcircular in outline, cephalon twice as wide as long, with a narrow fringe. Glabella flask-shaped, narrow, bulbous in front, constricted to a narrow, low neck behind. There are three pairs of glabellar furrows beside the neck-furrow, two pairs showing as deep pits in the "neck," and one pair as small indentations back of the middle of the "bulb." Fixed cheeks evenly convex, without eyes or eye-lines. Surface of glabella and cheeks reticulate. Fringe narrow, marked by radiating grooves separated by rounded ridges of about their own width. In the bottom of each groove are two pits, the anterior of which is the larger. At the genal angles the fringe widens and is marked by a number of irregularly placed, small pits. No specimen has been seen which retains genal spines, but they were undoubtedly present, as there is a long spine on one of the slabs.

Thorax of six narrow segments of the usual form in the family.

Pygidium a little more than twice as wide as long, somewhat angular in outline on the posterior margin, nearly flat, with an abruptly deflected smooth border. Axial lobe narrow, not strongly elevated, with twelve to fifteen narrow rings separated by narrow, sharp furrows. Pleural lobes flat, with eight or nine pairs of ribs, each bearing a broad deep furrow.

Measurements:— The holotype is 19 mm. long, 19 mm. wide at the genal angles; the cephalon 8 mm. long, thorax 5, and pygidium 6 mm. long. The bulb of the glabella is 5 mm. wide; the axial lobe of thorax 3 mm. wide; the pygidium 13 mm. wide. The fringe is 1 mm. wide, and there are twelve grooves in 5 mm. Another specimen is 19 mm. long and 18 mm. wide, and a third 12.5 mm. long and 12 mm. wide.

This species, the first American representative of the genus to be known from complete specimens, is more like *Trinucleus diademata* (Ruedemann) than any other allied form. Ruedemann's species from the boulders at Rysedorph Hill was described from an incomplete cephalon, so that detailed comparison is not possible. It would appear, however, that our species has a narrower fringe and less prominent glabella than specimens from the New York.

Trinucleus fimbriatus Murchison, the type of the genus as restricted, is very similar to *T. acervulosus,* but differs in having more pits in the fringe, particularly at the genal angles. *T. fimbriatus* is probably from about the same horizon (Llandeilo) as our species.

Horizon and Locality:— Numerous specimens have been collected by Prof. Roy Holdon from the Athens shale three miles northeast of Blacksburg, Va. Holotype M. C. Z. 1,592.

Dionideidae, fam. nov.

Dionideae Gürich, Centrabl. min. geol. pal., 1907, p. 135 (*nomen nudum*).

Dionide has usually been placed with Trinucleus and Ampyx in the Trinucleidae. The structure is, however, not in accord with either of those genera and since they have been separated, Dionide can not logically be placed in either family. The free cheeks are ventral like those of the Trinucleidae but the cephalon does not have a regularly pitted brim and the pygidium is very large. The family may be diagnosed as follows:—

Isopygous hypoparia with six segments in the thorax and both shields large. Free cheeks ventral except for the genal spines. Surface of cephalon irregularly pitted. Hypostoma short, rounded, tuberculated.

One genus, Dionide, Barrande. Ordovician, Europe and North America.

Dionide holdoni, sp. nov.

Animal of medium size for the genus; test oval in outline, about one fifth longer than wide.

Cephalon short, about three times as broad as long. Glabella relatively short, reaching only two thirds the length of the cephalon, moderately convex in outline, smooth except for the small median tubercle and a larger spine-base back of it. At the sides of the glabella there are faint indentations of a pair of lateral furrows, and at the back is a pair of short longitudinal ones. These latter are somewhat longer in young specimens than in the adults. Fixed cheeks depressed convex, covered with a fine network of irregular radiating branching ridges and small shallow pits. The two principal "nervures" originate on either side of the glabella just in front of the lateral furrows and run diagonally backward, reaching the neck-furrow some distance inside the genal angles. Those on the right cheek of one specimen not only branch, but in the outer part of their course, the two unite, showing conclusively that they are not facial sutures. The cephalon has a narrow, upturned rim around its border, and in the concentric depression within this is a row of pits which are larger and deeper than the others on the cephalon. The neck-furrow is linear, clearly impressed and the neck-segment smooth. As usual in the genus, the facial suture is marginal except at the genal angles, where it cuts off the spines. These latter are not satisfactorily preserved on any specimens but apparently were not long enough to reach beyond the third thoracic segment, a very unusual feature in this genus, and leading one to suspect that the specimens are incomplete in this regard.

Thorax with six narrow segments, the first of which is a little wider than the succeeding ones, but not differently marked. Axial lobe narrow, each ring showing the diagonal furrow at the sides as is usual in the genus. The furrows on the pleural lobes divide each lateral portion of a segment into an anterior area which is pitted like the fixed cheeks, and a narrower smooth posterior part.

The pygidium is about twice as wide as long, rounded in outline, with, in some cases, sufficient straightness of sides to produce a slight triangularity. Axial lobe narrow, with about fifteen rings, and pleural lobes with about twelve pairs of furrowed ribs which extend to the edge. Surface pitted, like that of fixed cheeks.

MEASUREMENTS:— One specimen is 15.5 mm. long, 13 mm. wide at the genal angles. The pygidium is 5.5 mm. long, 11.5 mm. wide, thorax 4.5 mm. long, cephalon, 5.5 mm. long. Another specimen is 15 mm. long, and 12.5 mm. wide. A third specimen is 19.5 mm. long, and 15 mm. wide.

A cephalon is 6 mm. long and 18 mm. wide; distance from back to front of glabella, 4 mm., width of glabella 4.5 mm.

This species is more like *Dionide richardsoni* Reed than any other known species of the genus. The likeness is emphasized particularly by the ornamentation of the thorax. It has, however, fewer rings and ribs on the pygidium, a wider cephalon and narrower axial lobe. The ornamentation of the thorax and pygidium separates it from all other species.

HORIZON AND LOCALITY:— This species has so far been found only at a locality about 100 feet below the top of the Athens shale about three miles northeast of Blacksburg, Va., where it was collected by Professor Holden, for whom it is named. The associated fossils are typical Normanskill graptolites, brachiopods, and trilobites. Holotype M. C. Z. 1,590.

DIONIDE CONTRITA, sp. nov.

This species is represented by only a single specimen, a rather poor pygidium to which are attached parts of two segments of the thorax. It would not be worthy of description were it not for the fact that it belongs to the group with large pygidia.

Cephalon not yet known.

Thorax with narrow axial lobe and short segments, the outer ends of which turn backward.

Pygidium large, nearly semicircular but not quite twice as wide as long. Axial lobe narrow, tapering gradually and regularly. The last four millimeters of the axis are broken off, but the anterior part shows eighteen rings, and there were apparently about twenty-four pairs of ribs on the pleural lobes, these being especially crowded at the posterior end.

MEASUREMENTS:— Length of pygidium, 14.5 mm., width about 24 mm. The axial lobe is 5 mm. wide at the front.

HORIZON AND LOCALITY:— The only known specimen was collected by the writer about 100 feet above the bottom of the Athens shale near the Thomas farm three miles northeast of Blacksburg, Va. Holotype M. C. Z. 1,591.

RAPHIOPHORIDAE Angelin.

RAPHIOPHORUS POWELLI, sp. nov.

Entire test broadly oval, nearly as wide as long. Cranidium approximately semicircular in outline, the glabella projecting slightly in front of the cheeks. Glabella obovate, prominently convex, with a small spine directed forward and upward. At the base of the glabella there are two small narrow lobes, cut off by the posterior glabellar furrows. Fixed cheeks depressed convex. Free cheeks missing, but evidently narrow. Thorax with five segments, each pleuron bearing a deep linear, straight, median groove. Pygidium short and wide, with abruptly deflected posterior border. The pleural lobes bear two pairs of faintly defined ribs which curve backward to the margin.

MEASUREMENTS:— Length, 10.5 mm., width 9 mm. Length cephalon 5 mm., width 9 mm. Width glabella at front, 3 mm., at back 2 mm. Length thorax 2.5 mm., width axial lobe 2 mm. Length pygidium, 2.5 mm. (*circa*), width 8 mm.

This species most nearly resembles *R. semicostatus*, differing only in having a less rapidly expanding glabella, in the presence of glabellar lobes, and in the pygidium, which has fewer and curved, instead of straight, ribs.

HORIZON AND LOCALITY:—Aside from the typical region, the Catawba Valley, Va., I have also found this species at Saltville, in the lower part of the Athens, and in yellowish calcareous shales near the railroad station at Bull's Gap, Tenn. Holotype 1,598 M. C. Z. Paratype M. C. Z. 1,599.

ENDYMIONIIDAE, fam. nov.

This family is erected for species which resemble the Raphiophoridae in the possession of narrow free cheeks without eyes, and a short Ampyx-like pygidium, but lack a glabellar spine. The typical genus is Endymionia. The family may be briefly characterized as follows:—

Hypoparia with narrow dorsal free cheeks but no eyes, no glabellar spine, seven segments in the thorax, short ampycid pygidium.

Ordovician, Quebec, Newfoundland, Scotland, and Sweden.

ENDYMIONIA Billings. Cephalon evenly convex with large glabella divided into three parts by a pair of longitudinal furrows. Axial lobe of thorax about one third the total width.

Type, *Endymionia meeki* Billings.
Lower and Lower Middle Ordovician, Quebec, and Newfoundland.

ANISONOTUS, gen. nov. Cephalon irregularly convex, glabella small, with lateral furrows indicated by pits. Axial lobe of thorax narrow.

Type, *Shumardia glacialis* Billings.
Lower and Lower Middle Ordovician, Newfoundland, Scotland, Sweden. Other species which appear to belong to this genus are *Anisonotus hornei* (Nicholson and Etheridge) from the Balclatchie (Llandeilo) of Scotland and *A. obtusus* (Moberg and Segerberg) from the Ceratopyge shales of Sweden.

ENDYMIONIA SCHUCHERTI, sp. nov.

Endymionia meeki Billings (*partim*). Palaeozoic foss. Canada, 1865, **1**, p. 281.

Specimens of this species are larger than those of *E. meeki*, with smooth rather evenly convex cephalon, and flattened thorax and pygidium. Lengths of cephalon, thorax, and pygidium in the proportion 2 : 2 : 1.

Cranidium a little more than twice as wide as long, smooth, gently and evenly convex. Glabella very large, depressed convex, with large lateral lobes strongly suggestive of Amphilichas. The outline of the whole glabella is roughly circular, the width being a little greater than the length of the glabella and neck-ring. The confluent glabellar furrows follow exactly the same course as do those of an Amphilichas, separating large, oval, diagonally placed lateral lobes. The central lobe is narrowest a short distance in front of the neck-furrow, and widest at the front. In front of the glabella the cheek slopes down to a very narrow flattened or concave border which is absent from the sides, where narrow, free cheeks extending back to the genal angles and probably elongated into genal spines were probably present. No evidence of the presence of eyes remains, and it is probable that like the Raphiophoridae these were blind trilobites with dorsal facial sutures. The neck-furrow is distinct all across the back of the cephalon, but narrow. The neck-segment is wider near the distal ends than near the axial lobe.

The thorax has seven narrow segments, the axial lobe being gently convex and the pleural lobes flat. The axial lobe is rather wide, nearly one third the total width and tapers very little from front to back. On the pleural lobe each segment shows a rather wide, deep, central furrow.

The pygidium is short, Ampyx-like, with four rings on the wide axial lobe and three pairs of ribs on the pleural lobes, and is surrounded by a steeply sloping striated border.

Measurements:— Entire specimen; length, 10 mm., width at genal angles, 9 mm.; length cephalon, 4 mm., thorax 4 mm., pygidium 2 mm., width glabella 3.75 mm., width axial lobe at front of thorax 2.5 mm., at front of pygidium 2 mm., width pygidium at front 6.5 mm. Largest cranidium, length 9 mm., width 15 mm., width glabella 8 mm., length glabella 7.5 mm.

This species is very like *E. meeki,* and I should not have been able to separate the two had not specimens of both been before me. In *E. schucherti* the glabella is more nearly circular in outline, broader, and flatter than in *E. meeki,* and the median tubercle is fainter and farther forward, so faint in fact as to be invisible on most specimens. In *E. meeki* there is a strongly striated abruptly sloping border in front of the glabella while in *E. schucherti* the corresponding portion is a smooth "roll" sloping down to a narrow concave border.

Horizon and Locality:— Professors Schuchert and Twenhofel collected twelve specimens, three of them entire, from the limestones of Division N, (Normanskill) at Table Head, Newfoundland. Billings referred to this form as occurring abundantly in Division N at Table Head and the west side of Pistolet Bay, also in Division P, four miles northeast from Portland Creek, Newfoundland. The types are in the Yale University Museum. Named for Prof. Charles Schuchert.

ANISONOTUS, gen. nov.

ANISONOTUS GLACIALIS (Billings).

Shumardia glacialis Billings, Palaeozoic foss. Canada, 1865, **1**, p. 238, fig. 270.

Entire trilobite oval in outline, nearly as wide as long, the greatest width being at the back of the cephalon. The cephalon is strongly convex; the thorax and pygidium nearly flat except for the axial lobe, which is narrow and elevated.

The cephalon is trinuclear, the swollen glabella rising above the mound-like fixed cheeks. The glabella extends two thirds of the length of the cephalon (measured on the curvature) and shows at the sides four pairs of pits. The last pair represent the neck-furrow, and the others the fourth, third, and second pairs of glabellar furrows. The first and fourth pairs of pits are much less conspicuous than the others. The elevated glabella is bounded by a pair of narrow furrows which converge backward and outside these is a pair of furrows which are parallel to the axis of the head. Between the parallel and the converging furrows are a pair of only slightly elevated triangular ridges, the apices pointed forward.

Outside the parallel furrows on the cephalon there are two evenly rounded mounds, limited on the inside and back by straight furrows intersecting at right angles and at the front by a curving depression which joins the dorsal furrows opposite the anterior glabellar furrows. In this depression there is on each side a narrow but distinct eye-line which curves backward around the mound and continues to the border of the cheek, meeting it at the horizon of the neck-furrow. In front of this furrow and in front of the glabella there is a rather abrupt bulging slope to the margin, which appears to be somewhat thickened, but probably without rim or brim. The type being exfoliated, gives the appearance of a very narrow brim on the front.

At the genal angles the fixed cheeks are drawn back into short lapets which extend behind the neck-ring. These lapets are semicircular in outline, and it is difficult to decide whether they are the actual genal angles, or whether they were enveloped by spines belonging to the free cheeks. In front of the angles there is a slight sinuosity in the side of the cheek, and along this part the border which is present on the front of the cephalon is absent. This seems to indicate that free cheeks should be present, but very narrow ones as in most species of Ampyx. These cheeks would probably have borne the genal spines.

The anterior portion of the cephalon is covered with very fine wavy lines parallel to the anterior edge.

The thorax has seven segments, and does not taper from front to back. The axial lobe is narrow, one fifth of the total width, and strongly elevated. The pleural lobes are flat, each pleuron bearing a linear groove whose course is at right angles to the axis. The first two segments do not extend quite so far at the sides as those behind — a common condition in trilobites with genal spines.

The pygidium is nearly semicircular, but has the somewhat triangular appearance so often seen in pygidia of ampycids or trinucleids. The axial lobe is narrow, elevated, and extends almost to the posterior border. The pleural lobes are flat, and turn down but little to the very narrow thickened margin. Singularly enough, there is a ring on the axial lobe for each pair of ribs on the pleural lobes, so that rings and ribs are continuous. Nine distinct rings are present. The ribs are narrow and flat, with just a suggestion of an impressed line along the top.

MEASUREMENTS:— Length 14.5 mm., greatest width, 13 mm., width at middle of thorax, 10.5 mm. Length of cephalon 6.5 mm., width 13 mm.; length glabella 4.5 mm., width of glabella at front 3.25 mm. Length of thorax 4 mm., width 10.5 mm.; width of axial lobe 2 mm. Length of pygidium 3.25 mm., width at front 9 mm.; width of axial lobe at front 1.5 mm. A flattened cephalon is 6 mm. long, 15 mm. wide, and the glabella is 4.5 mm. long.

This species differs in many respects from *Endymionia meeki*. The glabella is shorter and considerably narrower, has four instead of two pairs of pits at the sides, and has much less prominent lobes beside it. *E. meeki* does not seem to have the mound-like cheeks, and eye-lines are absent. The axial lobe of the thorax is much narrower in *A. glacialis* than in *E. meeki*, and the furrows on the pleura are straight instead of sinuous. The pygidium of the present species has a narrower axial lobe and more rings and ribs than in the Beekmantown form.

With the knowledge of this specimen it is possible to get a better idea of the characteristics of the Endymionidae. The form of the thorax and pygidium and the presence of narrow free cheeks approach very closely to the Raphiophoridae, being excluded from that family as now defined only by the shortness of the glabella and the absence of a long spine therefrom.

HORIZON AND LOCALITY:— Billings's specimens came from the conglomerates of Portland Creek and Pistolet Bay, Newfoundland. Hyatt found it on the east side at Port au Port, and Schuchert and Twenhofel obtained three fragments from the same locality. The horizon is their zone 6, Normanskill. Genoholotype M. C. Z. 1,594.

OLENIDAE Burmeister.

TRIARTHRUS CAECIGENUS, sp. nov.

Entire test oval, of the usual shape in this genus, without spines or pustules except for a small one on the neck-ring.

Cephalon somewhat irregular in outline, the glabella projecting in front of the cheeks. Glabella long and wide, with a very narrow circumglabellar furrow and a very narrow upturned border. There are two pairs of glabellar furrows which run inward and somewhat backward and are deeply impressed, particularly at their inner ends. Fixed cheeks narrow, with a somewhat wide convex marginal border which extends around the sides and connects with the neck-ring. A truncation of this border at the sides suggests the possible former presence of very narrow free cheeks, but there are no traces of palpebral lobes.

Thorax with (apparently) eleven segments. Axial lobe wide and the rings smooth.

Pygidium strongly segmented, with about six pairs of ribs on the pleural lobes and seven rings on the axial lobe.

MEASUREMENTS:— Length, 11.5 mm. Length cephalon, 3.5 mm., thorax, 5.5 mm., pygidium, 3 mm. Width at genal angles, 6 mm., width glabella, 3 mm., width axial lobe at front 2.75 mm., width pygidium 4 mm.

This species can be distinguished from all others by the absence of eyes. The most closely allied species is *Triarthrus humilis* Hadding which has the eyes far forward and the free cheeks very narrow.

HORIZON AND LOCALITY:— A rather common species in the Athens shale in the Catawba valley north of Salem, Va., where the type was collected by Prof. S. L. Powell, and also at Laskers Gate, three miles northeast of Blacksburg, Va., where it was collected by Dr. R. M. Field and the writer. A few specimens were also found at Saltville, Va., near the base of the Athens. Holotype M. C. Z. 1,593.

REMOPLEURIDAE Corda.

ROBERGIA MAJOR, sp. nov.

Cephalon large, rounded in front, wider than long, with long narrow spines at the genal angles.

Glabella elongate, a little expanded in front of the long eyes, with three pairs of furrows on the wide portion between the eyes. In front of the glabella there is an extremely narrow flattened border. Free cheek narrow, extended backward into a narrow spine of about its own length.

Hypostoma bifurcated, with two very long prongs, as in Remopleurides.

Thorax known from two incomplete specimens, the larger with nine segments. Judging from these specimens the thorax is long, narrow, with very little taper. The axial lobe is wide, convex; the side lobes flat and narrow, the individual segments ending in short spines.

Pygidium nearly square, as long as wide, sides straight and slightly convergent. Axial lobe elevated, extending three fourths of the length, wide at the front, tapering regularly backward. There are four well-marked rings. Pleural lobes practically flat, apparently crossed by obscure ribs, but all specimens are exfoliated, showing a wide striated doublure. The posterior margin shows two pairs of short flat spines, the inner ones being wider than the outer, and extending practically as far back.

MEASUREMENTS:— A large cranidium is 15.5 mm. long, and 15 mm. wide at the palpebral lobes. Nine segments of a thorax are 7.5 mm. long, 4 mm. wide at the anterior end and 3.5 mm. wide at the posterior. The axial lobe is 2.5 mm. wide at the front. A pygidium is 10 mm. long, 10 mm. wide at the anterior end and 9 mm. wide at the posterior end. The axial lobe is 5 mm. wide at the anterior end and 7.5 mm. long.

This species is exceedingly abundant in the Athens at Saltville, Va., and though no complete specimens have so far been found, it is now known from all the parts, including the hypostome, which cannot be said of any other species of the genus. It differs but little from *Robergia schlotheimi,* such differences as there are being in the pygidium, which has a longer and wider axial lobe, is more nearly square, and has a straighter posterior margin. It differs from the Swedish *R. micropthalma* chiefly in the pygidium which is much more nearly square and has two instead of three pairs of spines.

HORIZON AND LOCALITY:— A very abundant species in the lower part of the Athens at Saltville, Va., but not yet found elsewhere. Cotypes M. C. Z. 1,601 to 1,606.

STYGINIDAE, fam. nov.

Approximately isopygous Opisthoparia with glabella greatly expanded at the front, anterior portions of the facial sutures widely divergent, eyes typically very far back. Thorax of nine segments in the typical genus. Pygidium with well-defined, long axial lobe, pleural lobes smooth or with faint furrows.

STYGINA Salter. Glabella only faintly outlined, without furrows. Eyes close to posterior margin.

Type, *Stygina latifrons* (Portlock).
Ordovician, Scandinavia, and British Isles.

BRONTEOPSIS Nicholson and Etheridge. Glabella strongly outlined, with or without three pairs of furrows. Eyes close to posterior margin.

Type, *Bronteopsis scotia* Nicholson and Etheridge.
Ordovician, Sweden, Great Britain, and eastern North America.

HOLOMETOPUS Angelin. Glabella strongly outlined. Eyes about their own length from the posterior margin.

Type, *Holometopus limbatus* Angelin.
Lower Ordovician, Scandinavia and eastern North America.

BRONTEOPSIS GREGARIA, sp. nov.

Holometopus angelini Billings (*partim*), Palaeozoic foss. Canada, 1865, **1**, p. 281. *Non*, p. 95, fig. 85.

Cranidium much expanded at the front, so that it is wider than long. Glabella convex, prominent, expanded at the anterior end, the width there being equal to about three fourths the length. The glabella tapers rapidly toward the narrowest place, at the neck-ring, and has an obscure median carina on its posterior half. In the dorsal furrows are obscure indications of three pairs of pits, one pair close to the anterior margin and two pairs on the constricted "neck" of the glabella, these being obscure glabellar furrows. The fixed cheeks form wide flattened bands on either side of the glabella and opposite its narrow part, are raised nearly or quite as high as the glabella itself. The neck-ring bears a small median tubercle.

Pygidium approximately semicircular in outline, convex, with a narrow concave border. Axial lobe long, the acutely tapering posterior end continuing though only faintly raised, to the border. At the anterior end of the axial lobe are three well-defined rings, behind which there are two or three rather obscure ones. The pleural lobes are smooth, except for an anterior rib. The smaller specimens are nearly flat, and the posterior portion of the axial lobe more clearly defined than in the large ones.

MEASUREMENTS:— Length cranidium, 7.5 mm., width at front, 9 mm. Width glabella at front, 5.5 mm., at neck furrow, 3.5 mm. Length pygidium 4 mm., width, 7.5 mm.

HORIZON AND LOCALITY:— The types are from the base of the Liberty Hall limestone at Lexington, Va., where the species is common. It is also common at the top of the Holston at the Thomas farm, three miles northeast of Blacksburg, Va., and in the Athens at Chatham Hill, on the northern slope of Walker Mountain, north of Marion, Va. A single specimen was found above the middle of the Holston on the Hoge farm seven miles south of Bland, Bland Co., Va., and another single specimen in the middle Ottosee, seven miles north of Mendota. Specimens from these three localities are in entire agreement. In Tennessee I found it at only one locality, between the Holston and Tellico, in South Knoxville.

In Newfoundland Schuchert and Twenhofel found this species in zones M_2, N_1, and the Isolated limestone, all at Table Head. These specimens differ from the ones described above in having the cranidium a little shorter and broader, the posterior part of the glabella a little wider, and a slightly shorter axial lobe on the pygidium. Specimens nearer these than the other Virginian specimens were collected by Dr. Shuler on the northern side of Walker Mountain near White Gate, Bland Co., Va.

This species is much more nearly related to *Bronteopsis ardmillanensis* Reed, than to the type of the genus. The Scottish species has a slightly different conformation of the fixed cheeks and more traces of ribs on the pleural lobes of the pygidium, but the differences between the two species are small. *B. nitens* Wiman, obtained from boulders of the older Chasmops limestone, has a somewhat wider glabella and a more acutely triangular axial lobe on the pygidium than our species. Cotypes M. C. Z. 1,595 to 1,597.

ASAPHIDAE Burmeister.

NILEOIDES, gen. nov.

Some years ago I described (Annals Carnegie museum, 1910, **3**, no. 1, p. 69, pl. 18, fig. 7, 8. Seventh rept. Vermont state geologist, 1910, p. 224, pl. 38, fig. 7, 8. Trans. Roy. soc. Canada, 1912, ser. 3, **5**, sect. 4, p. 119, pl. 2, fig. 8, pl. 3, fig. 1) *Nileus perkinsi* found in the Upper Chazy on Isle La Motte, Vt. While evidently closely allied to Nileus, this species differs from all other species of that genus in having the eyes relatively small and particularly in having them very far back. Another peculiarity is the strong development of the vertical suture on the doublure. I have examined with care great numbers of specimens of Nileus from Norway and Sweden without ever finding this suture, nor does it show in any of the American specimens. The strong development in *Nileoides perkinsi* is therefore of considerable importance.

Cephalon Nileus-like, glabella not outlined, cranidium smooth, gently convex, elongate, not abruptly inflected in front of the eyes. Eyes large, but not so large in proportion to the length of the cephalon as in Nileus. Vertical suture present. Axial lobe of thorax wide.

Type, *Nileus perkinsi* Raymond. Upper Chazy, Vermont.

HYBOASPIS gen. nov.

This name is proposed for a curious trilobite in the pygidium of which are combined the elongate form of the asaphid and the short axial lobe of the illaenid. I know of no asaphid with short axial lobe on the pygidium and only in Actinolobus among the Illaenidae is there any hint of elongation of the pygidium and even there nothing comparable to what is seen in the form now to be described. While the ascription of the genus to either the Asaphidae or Illaenidae cannot positively be made until the cephalon is found, I have for the present placed it with the Asaphidae.

HYBOASPIS SHULERI, sp. nov.

Cephalon and thorax unknown.

Pygidium elongate, narrow, highly convex, turned up somewhat at the posterior end. Axial lobe low, not sharply outlined, without rings, a trifle more than one third the total length. Pleural lobes steep-sided, with narrow concave border, which does not extend around the posterior end. No traces of ribs, except for the anterior one. Surface of pleural and axial lobes crossed by wavy cracks which have a course approximately at right angles to the axis. Doublure wide, especially at the posterior, where it extends halfway to the front, and marked by strong but widely separated terrace lines.

MEASUREMENTS:— The largest pygidium is 73 mm. long and about 56 mm. wide. The smallest is 22 mm. long and 21 mm. wide. In the large specimen the axial lobe is 25 mm. long. In the small one it is 8 mm. in length.

I know of no trilobite with which this can be compared.

HORIZON AND LOCALITY:— Only three pygidia of this species have so far been found, two by Dr. E. W. Shuler in 1914 and one by the writer in 1917. All came from the middle of the Holston in the McNutt quarry at Sharon Springs, Bland Co., Va. Cotypes M. C. Z. 1,587, 1,588.

HOMOTELUS, gen. nov.

Onchometopus Raymond and Narraway, *non* Schmidt.
Isotelus (*partim*) of authors.

The generic name Onchometopus was first applied (Ann. Carnegie mus., 1910, 7, no. 1, p. 51; Raymond, *Ibidem*, p. 63) to an American trilobite by Raymond and Narraway in describing a new species from the Middle Ordovician of Minnesota and Pennsylvania. The essential features of the trilobites for which this name has been used are the isoteliform glabella and sutures, but asaphiform lack of concave borders on the shields. Since my attention was first directed to this combination of characteristics wider experience has shown that they form a large group in the Middle and Upper Ordovician and that while similar to the Russian Onchometopus they are probably not congeneric with it. The two genera form one more example of that "Parallelism among the Asaphidae" to which I have already called attention (Trans. Royal soc. Canada, 1912, **5**, sect. 4, p. 111). Detailed study with large numbers of specimens indicates that Onchometopus is a derivative of Asaphus, while Homotelus sprang from Isotelus, not once merely, but probably several times. Homotelus differs from Isotelus chiefly in lacking the concave borders on the shields. Often specimens are found in which concave borders are feebly or sometimes even well developed, indicating that this characteristic is one of suppression and showing readily how a Homotelus could have been evolved time after time from various species of Isotelus. Homotelus cannot then be regarded in a strict sense as a good genus, but is a convenient term for a number of species showing similar characteristics.

At the time of our first use of Onchometopus, Mr. Narraway and I pointed out that the American species which we referred to the genus did not have the peculiar hooked doublure which Schmidt considered the most important feature. In 1914 it was my privilege, aided by the Shaler Memorial fund, to collect Onchometopus from the typical localities south of Lake Ladoga, and direct comparison of specimens is now possible. Cephala of American and Russian forms are exceedingly alike in smoothness of glabella, position of eyes, course of facial sutures, and shape of fixed and free cheeks. Doublures are strikingly different not only in the hooked and furrowed character of the Russian form, but also in its narrowness. Greater differences are seen in the thorax, where Onchometopus shows the high narrow rings of an Asaphus while the Homotelus has the broader and flattened rings of the Isotelus. The pygidia again are similar but that of Onchometopus is generally shorter and more nearly semicircular.

As the type of Homotelus I am selecting a species from the Eden of the region of Cincinnati, chosen because of the excellent material available, and named *Homotelus ulrichi* for Dr. E. O. Ulrich of the U. S. Geological Survey.

HOMOTELUS ULRICHI, sp. nov.

Outline of entire animal oval, whole surface rather evenly convex, the eyes being the only conspicuous prominences. Cephalon and pygidium about equal.

Cephalon twice as wide as long, nearly semicircular, but since the outline comes just within the semicircle passing through the anterior point and genal angles there is a suggestion of triangularity. The glabella is smooth, not differentiated. On an occasional specimen there are two pairs of pits between the eyes, the vestiges of two pairs of glabellar furrows. The neck-furrow is practically obsolete and just in front of its normal position is a very small median pustule. The dorsal furrows are very faint except on crushed specimens. The eyes are small, strongly elevated and far apart. The palpebral lobes are small, concave on top and so short that a part of the visual surface looks upward. The genal angles are rounded and the sides of the cheeks have a narrow flattened and striated border which stands at an angle with the general surface and is turned downward at the sides and front. This joins the nearly horizontal doublure in a sharp edge.

Axial lobe of thorax wide, but less than one half the entire width.

Pygidium not quite twice as wide as long, the narrow axial lobe faintly but definitely outlined, most prominent at the posterior end. Pleural lobes smooth.

MEASUREMENTS:— The entire specimen selected as the type is 58 mm. long and 33 mm. wide at the genal angles. The cephalon is 18.5 mm. long, the eye 5 mm. long, and the back of the eye 6 mm. from the posterior margin of the head. The thorax is 20 mm. long, 32 mm. wide at front and 32 mm. wide at back. The axial lobe is 15 mm. wide at front and 13.5 mm. wide at back. The pygidium is 19.5 mm. long, 32 mm. wide at the front. The axial lobe is 15 mm. long.

Homotelus obtusus (Hall) of the Chazy differs from this species in having more strongly impressed furrows and particularly in its very conspicuously punctate shell. *Homotelus simplex* (Narraway and Raymond) is much more closely like the present one but has the eyes larger and further back, more traces of ribs on the pygidium, and lacks the angulated border on the cephalon.

HORIZON AND LOCALITY:— This species seems to be quite common in the Eden in the vicinity of Cincinnati, Ohio, but as the specimens are all in the Dyer collection I have no data on either exact horizon or locality. Cotypes M. C. Z. 1,575, 1,576.

HOMOTELUS ELONGATUS, sp. nov.

Onchometopus simplex Bassler (*non* Raymond and Narraway), Maryland geol. sur., Cambrian and Ordovician, 1919, p. 348, pl. 47, fig. 11.

Test large for the genus, elongate, both shields subtriangular, strongly convex. Cephalon subtriangular, less than twice as wide as long, evenly convex. Glabella smooth, not outlined, dorsal furrows present only back of the eyes and glabellar furrows obsolete. Eyes prominent, situated a little back of the middle but more than their length ahead of the posterior margin. Genal angles rounded.

Thorax abruptly deflected at the sides, depressed convex on top. Axial lobe less than one half the total width.

Pygidium triangular, strongly and evenly convex, the axial lobe hardly outlined except at the posterior end. Exfoliated specimens show traces of several ribs on the pleural lobes.

MEASUREMENTS:— One entire but much damaged specimen is about 105 mm. long and 60 mm. wide at the genal angles. A well-preserved pygidium is 44 mm. long and 63 mm. wide. A smaller one is 36 mm. long and 51 mm. wide.

This species is readily recognized by its highly convex triangular shields. The axial lobe of the pygidium is also less strongly defined than in most other species.

HORIZON AND LOCALITY:— A very common species in the lower Echinosphaerites zone of the Chambersburg in the vicinity of Chambersburg and Marion, Penna. and Strasburg, Va. Bassler reports it from the Nidulites zone of the Chambersburg at Wilson, Md. Cotypes M. C. Z. 1,577 to 1,579.

HOMOTELUS INDENTUS, sp. nov.

This species is so far represented only by pygidia but these differ obviously from the majority of species of the genus in their more elongate form and the upturned posterior border. The axial lobe is long, narrow, gently tapering, and prominent. The pleural lobes ribless, evenly convex. Back of the axial lobe the posterior margin is upturned, so that in this region there is a concave border. This upward tilt in the posterior margin suggests a somewhat pointed cephalon. The surface of the test is covered with small flat-bottomed circular depressions which are arranged about as closely together as they can be and still retain their circular shape. They appear to be very large but superficial puncta. Along the borders these are less numerous, and among them are numbers of short wavy cracks roughly parallel to the margin. Exfoliated specimens of course show no trace of this ornamentation but do show faint traces of ribs on the pleural lobes.

MEASUREMENTS:— The largest pygidium is 43 mm. long and 57 mm. wide. The axial lobe is 35 mm. long and 17 mm. wide at the front. A second specimen is 33 mm. long and 45 mm. wide. The ratio of length to width indicates the elongation of the pygidium in this species. This index in *H. ulrichi* which is more like *H. indentus* than any other described species is about 610, in *H. obtusus* it is 655 to 680, in *H. elongatus*, which has a long pygidium it is about 700, while in the largest specimen of *H. indentus* it is 754.

Aside from the length of the pygidium and the upturned posterior margin, the character of the ornamentation serves to identify this species.

HORIZON AND LOCALITY:— This seems to be a rather rare species, found so far only in the Holston in the Catawba Valley, north of Salem, and on the Hoge farm, nine miles southwest of Bland, Va. The specimens from this latter locality were collected by Dr. E. W. Shuler. Cotypes M. C. Z. 1,581, 1,582.

HOMOTELUS LAEVIS, sp. nov.

This name is suggested for a species, the pygidia of which are common and of which a few fragmentary cranidia and free cheeks have been seen. In general outline and proportions the pygidium is most like that of *H. obtusus* but the axial lobe is more strongly developed and the puncta are much fewer, finer, and farther apart. There is also a faint concave border on the posterior part. The cranidium is very slightly convex, the eyes large and well back. The cephalon is in fact much more typically isoteliform than that of any other species. Exfoliated or compressed specimens show rather plainly the ribs of the pygidium.

MEASUREMENTS:— A small pygidium is 22 mm. long and about 35 mm. wide. The axial lobe is 16 mm. long and 11 mm. wide at the front. A large specimen (flattened) is 45 mm. long and about 70 mm. wide.

This species is exceedingly common in the Athens at Chatham Hill, on the northern slope of Walker Mountain, north of Marion, Va. It is also found in the same formation near White Gate and Tilsons Gap, Bland Co., and in the Holston near McDonalds Mills in the Catawba Valley, north of Salem, Va., in all of which localities it was collected by Dr. E. W. Shuler; and also in the Holston at the McNutt quarry, Sharon Springs, Va. A single large pygidium collected by the writer in the Athens near Saltville, Va., is probably of this same species. In the lower part of the Athens near Bull's Gap, Tenn., the species is quite common. Holotype M. C. Z. 1,600.

HOMOTELUS LAEVIURUS, sp. nov.

This species has a short broad cranidium, of little convexity, on which the glabella is entirely merged into the general surface, and dorsal and glabellar furrows quite absent. The median pustule is small but prominent on the otherwise smooth surface, and the shell seems devoid of puncta. The free cheeks and thorax are unknown.

The pygidium is evenly convex and the only marking is a very slight swelling indicating the position of the posterior end of the axial lobe. Even in internal casts the outline of the axial lobe shows only vaguely.

MEASUREMENTS:— A cranidium is 17 mm. long and 24 mm. wide at the tips of the fixed cheeks. At the widest point in front of the eyes it is 16 mm. wide. Another cranidium is 11.5 mm. long, 16 mm. wide at the tips of the fixed cheeks, and 9.5 mm. wide at the palpebral lobes. A pygidium is 14 mm. long and 19 mm. wide.

This species is more nearly allied to *Homotelus simplex* Raymond and Narraway than to any other described species, but has smoother shields, and the pygidium in particular shows less trace of the axial lobe. The absence of puncta in the shell separate it from *H. obtusus*, the only other species with which it could be confused.

HORIZON AND LOCALITY:— A very common trilobite in the Kimmswick limestone at Mincke, Mo., where it was collected by Dr. D. C. Barton. Cotypes M. C. Z. 1,584, 1,585.

HOMOTELUS CATACTUS, sp. nov.

The only representative of this genus so far found on Newfoundland is a single cranidium which does not seem referable to any of the described species.

This specimen indicates a short and wide cephalon which was evenly arched and rather convex for the genus. The glabella is merged completely into the general surface, and both dorsal and glabellar furrows are completely absent. The facial sutures turn far outward in front of the eyes, so that this portion of the cranidium is wider than in any other species of the genus. The palpebral lobes are large, indicating very large eyes, and are situated a little more than their own length in front of the posterior margin, but not quite twice their length from the anterior edge. The surface, so far as can be determined from a largely exfoliated specimen, is smooth.

This species differs from any previously described, in having larger eyes and in the greater width of the portion of the cranidium in front of them.

MEASUREMENTS:— Length of cranidium, about 32 mm., width at palpebral lobes, 32 mm. Length of palpebral lobe, 8 mm., distance from back of palpebral lobe to posterior margin, 11 mm.

The single specimen was collected by Professor Dunbar from a pebble in the Cow Head conglomerate on Stearing Island, Newfoundland, and is in the Yale University Museum.

HOMOTELUS GRATIOSUS, sp. nov.

Asaphus (*Isotelus*) *susae* Whiteaves (*non* Whitfield), Palaeozoic foss. Canada, 1897, **3**, pt. 3, p. 231.

Onchometopus susae Raymond, Proc. and trans. Roy. soc. Canada, 1912, ser. 3, **5**, sect. 4, p. 118, pl. 2, fig. 1, 2.

Cephalon nearly semicircular, evenly convex, with large, elevated eyes. Cranidium absent from the type, but on other specimens depressed, smooth, glabella not outlined. Fixed cheeks smooth, genal angles rounded. Eyes large, near the middle of the cephalon.

The axial lobe of the thorax is wide for an Homotelus, being nearly one half the total width.

Pygidium short and wide, nearly semicircular, with the axial lobe outlined at the anterior end only.

MEASUREMENTS:— Length of cephalon, 25 mm., width, 51 mm., the eye is 10 mm. long. Total width of thorax at middle, 48 mm., width of axial lobe, 23 mm. Length of pygidium, 26 mm., width 46 mm.

This species differs from *Homotelus florencevillensis*, which occurs at the same horizon, in having the eyes much farther forward and larger, as well as in the shorter and wider shields. It differs from other known species of the genus in the same particulars.

Horizon and Locality:— The holotype, a gift of Mr. A. H. Becker and Mr. John H. Bradley, Jr., M. C. Z. 1,573, was found near the top of the Maquoketa at Patterson's Spring, near Brainerd, Iowa.

Vogdesia Raymond.

Although proposed as a subgenus of Nileus, Vogdesia proves to be one of the Asaphinae, and closely related to Homotelus and Brachyaspis. This conclusion has been reached from a study of the dorsal surface, as the hypostoma has not yet been seen. Vogdesia differs from both the genera mentioned in having a wider axial lobe in the thorax, and little or no trace of dorsal furrows on the pygidium. The type is *Vogdesia bearsi* Raymond, from the Chazy. Other species are *Vogdesia minnesotensis* (Foerste) and Nileus sp. (Foerste, Bull. Denison univ., 1920, **19**, p. 218, pl. 23, fig. 4A, B) both from the Trenton, and *Vogdesia vigilans* (Meek and Worthen), a common trilobite in the Maquoketa.

Vogdesia gigas, sp. nov.

This species differs from *V. vigilans* only in that the type is twice as large as the largest known specimen of the latter, the eyes are farther from the anterior margin, and the test is slightly if at all punctate.

Measurements:— Specimen, if extended, about 120 mm. long. The cephalon is 34 mm. long and 58 mm. wide; an eye is 8 mm. long and 8 mm. from the posterior margin. The pygidium is 36 mm. long and 55 mm. wide, with no trace of an axial lobe. The thorax is estimated to be about 50 mm. long, each of the eight segments being 7 mm. wide in the enrolled state.

Horizon and Locality:— This species is known from a single specimen collected by the writer near the base of the Maquoketa on a creek four miles west of Clermont, Iowa. Holotype, M. C. Z. 1,589.

Ectenaspis, gen. nov.

Type, *Megalaspis beckeri* Slocum, Field mus. nat. hist. Geol. ser., 1913, **4**, p. 50, pl. 14, fig. 5. Iowa Geol. survey, 1916, **25**, p. 196, pl. 15, fig. 5.

Several years ago Mr. A. G. Becker, while collecting in the ravine of a small stream about two miles west of Clermont, Iowa, came upon a slab of limestone on which were two specimens of the trilobite which Slocum later described as *Megalaspis beckeri*. The outstanding feature of this animal is the great elongation of the anterior portion of the cephalon. The elongate triangular head-shield invited a comparison with such asaphids as *Megalaspis extenuata* (Dalman), hence the generic reference.

No one has as yet been fortunate enough to discover an hypostoma of this species, so that it is not possible to say definitely that *M. beckeri* is not a Megalaspis, but that it is almost certainly not one is indicated by the following considerations:—

1st. Nearly all the species of Megalaspis in the typical region in northern Europe are found in the Lower Ordovician, only one or two surviving till the Middle Ordovician, and none till the Upper Ordovician rocks were deposited.

2nd. Megalaspis is exceedingly rare in America, while isotelids are common and highly variable.

3rd. No hypostoma of the ogygiocarinid type has been found in the Maquoketa.

4th. The glabella of *Megalaspis beckeri* is not definitely outlined and is long, while in all species of the true Megalaspis the glabella is outlined and is relatively short.

5th. The axial lobe of the thorax of *M. beckeri* is wider in proportion to the total width than is that of any species of the true Megalaspis.

In consideration of the above, I make *Megalaspis beckeri* the type of a new genus, Ectenaspis, the extended or stretched out character of the cephalic shield suggesting the name. This genus seems very close to Isotelus, and its derivation from Isoteloides through some such forms as *I. angusticaudus* Raymond and *Ectenaspis homalonotoides* (Walcott) is quite probable.

Ectenaspis beckeri is an exceedingly rare fossil in the lower part of the Maquoketa (Upper Ordovician) in Fayette Co., Iowa. The only other species which can now be placed in this genus is *Ectenaspis homalonotoides* (Walcott).

ISOTELUS ANNECTANS sp. nov.

Isoteloides homalonotoides Raymond and Narraway (*non* Walcott), Ann. Carnegie museum, 1910, 7, p. 52, pl. 16, figs. 9–11.

This name is proposed for the species previously identified with "*Asaphus*" *homalonotoides*. Both cephalon and pygidium are similar to those of that species, but the anterior end of the cephalon is hardly elongate enough to justify a reference to Ectenaspis. It also seems better to restrict Isoteloides to forms like the type, *I. whitfieldi*, which has a rather distinctly outlined glabella and a narrow axial lobe.

This species forms a connecting link between Isotelus and Ectenaspis. The anterior end of the cranidium, while not elongate, is pointed, and though the glabella is not definitely outlined, some traces of its shape can be seen, and a pair of faint glabellar furrows are present on some specimens.

HORIZON AND LOCALITY:— A single cranidium of this species was found by Mr. Narraway in the Leray-Black River at Ottawa, Ont., and it is fairly common in the Glens Falls-Trenton at Pattersonville and Smith Basin, N. Y. The holotype is in the Carnegie Museum.

ISOTELUS REJUVENIS, sp. nov.

Entire specimen elongate oval, narrow, strongly convex. Cephalon large, with short genal spines which in uncrushed specimens have their outer surfaces nearly vertical. The facial sutures follow the same course as in *I. iowensis*, being very close to, and parallel to the anterior margin. The eyes are very small, elevated, situated a trifle more than their own length in front of the posterior margin. The glabella is faintly outlined, constricted between the eyes, and nearly smooth.

Thorax as in *I. iowensis*, the dorsal furrows shallow, and the axial lobe more than one third and less than one half the total width.

Pygidium elongate, narrow, with steep sides. The axial lobe is narrow, faintly outlined except in young specimens, and without rings except for the one on the anterior end. The pleural lobes show traces of several pairs of ribs, two of which at the anterior end are very distinct.

MEASUREMENTS:— The holotype is 105 mm. long; the cephalon is 38 mm. long and 62 mm. wide; the pygidium is 46 mm. long and 55 mm. wide.

This species differs from *Isotelus iowensis* in having smaller eyes, a longer and narrower pygidium with two pairs of ribs at the anterior end, and in having a less densely punctate shell.

HORIZON AND LOCALITY:— The species has so far been found only in the lower part of the Maquoketa at Clermont and Elgin, Iowa, at both of which places it is rather common in association with *I. iowensis*. The holotype, M. C. Z. 1,586, was collected by the writer on a creek about four miles west of Clermont.

ENCRINURIDAE Angelin.

Ectenonotus, gen. nov.

Among the anomalous trilobites described by Billings was one which had a glabella very like that of a Pliomerops, and a pygidium strongly suggestive of Encrinurus. Although no entire specimens have been reported the "glabella and pygidium were found in about equal numbers together, and in great abundance. Out of one small piece of rock scarcely a yard in length, there were taken twenty-seven specimens of the glabella, and twenty-four of the pygidium. In this mass of rock there was no other head to which the pygidium could be referred, nor any other pygidium to which the head could possibly have belonged."

The pygidium is distinctly Encrinurus-like in its elongate narrow form, very long axial lobe with numerous rings, and particularly in the way in which the posterior ribs on the pleural lobes curve back around the end of the axial lobe. The pygidium shows some differences from both Encrinurus and Cybele, but they are of a relatively minor character, and if it were not for the associated cranidium, the species would undoubtedly be admitted to the genus Encrinurus.

While the cephalon is Pliomerops-like, certain Encrinurid characteristics may be seen in it, particularly when compared with Cybele. The form of the glabella and position of the glabellar furrows is similar to what is seen in *Cybele bellatula* (Dalman) (Schmidt, Mem. Acad. imp. sci. St. Petersburg, 1881, ser. 7, **30**, p. 203, pl. 13, fig. 9) and the glabella does not expand toward the front as in Pliomerops. The most important point, however, is that the eye is not situated close to the glabella as in Pliomerops. The eye is not shown in any of the specimens but enough of the fixed cheek is preserved to indicate that, whether the eye is ultimately found to be far forward, as in Encrinurus and some species of Cybele, or far back as in other species of that genus, it must at least be placed at some distance from the glabella and thus be Encrinurid in position.

Billings made the cranidium the holotype of the species *Amphion westoni*, so that in case it should prove that the cranidium and pygidium do not belong together, the pygidium will belong to an unnamed species. I propose to designate the specimen from Newfoundland retaining the thorax and pygidium as the holotype of the genus, in order that there may be in the future no uncertainty as to how the names should apply.

Encrinuridae with pygidia whose simple pleural ribs do not end in spines, and whose glabellae have a pair of furrows which emerge on the front instead of the lateral border.

Type, *Ectenonotus westoni* (Billings).

Another species is *E. octocostatus* (Reed) from Glensaul district in Ireland.

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NEW NEUROPTEROID INSECTS.

By Nathan Banks.

With Seven Plates.

CAMBRIDGE, MASS., U. S. A.
PRINTED FOR THE MUSEUM.
October, 1920.

No. 3.— *New Neuropteroid Insects.*

By Nathan Banks.

In the course of identifying the Neuropteroid insects in the Museum numerous new species were found; some of these are herewith described. In several cases Dr. Hagen had given manuscript names, and in a few cases these have been published, as the South American species in the appendix to his Synopsis of the Neuroptera of North America. Wherever possible I have retained his manuscript name.

PSOCIDAE.

Psocus albovarius, sp. nov.

Type.— M. C. Z. 10,780. Straits Settlements: Singapore (C. F. Baker).

Head whitish, ocelli on a black spot, a dark median spot on vertex, and one below ocelli; nose faintly lineate with dark; antennae pale; thorax pale, with three large dark spots above in front; abdomen pale, darker at tip; legs whitish. Wings lightly fumose, except at base; stigma white, with a dark central spot; veins dark, stigmal vein white, veins at corners of the discal cell, the lower side of cell, the median vein shortly before cell and just beyond cell, and the forking of the radial sector prominently white; hind wings hyaline, venation pale. Discal cell much narrowed below, sides nearly straight; areola postica very long and low, its upper side a little longer than the outer side; posterior cells subequal; fork of radial sector more than twice as long as the pedicel; median vein and radial sector united for short distance; stigma of medium size, about its length before tip of wing, nearly right-angled behind.

Length to tip of wing 3.6 mm.

Psocus similaris, sp. nov.

Type.— M. C. Z. 10,779. Straits Settlements: Singapore (C. F. Baker).

Head brown, with a few small black spots and lines, one back of the ocelli; nose lined with black; antennae brown on basal part, beyond black, with some long hairs; thorax pale, a large black spot on each lateral lobe, and two spots on the anterior lobe; legs pale, tibiae and tarsi darker, abdomen dark, a white band above near tip. Wings hyaline; apical half of stigma dark, and also a little at base, and pale just before the dark; a small dark spot at end of anal vein. Veins dark, the forking of radial sector and lower side of discal cell pale. Stigma of moderate size and height, almost right-angled behind; radial sector and the median vein meet at one point; fork of radial sector twice as long as the pedicel; areola postica about as high as long, rather narrow above; discal cell one and a fourth longer than broad, slightly narrowed below, sides nearly straight; posterior cells subequal.

Length to tip of wings 3.2 mm.

Psocus pulchellus, sp. nov.

Type.— M. C. Z. 10,796. Straits Settlements: Singapore (C. F. Baker).

Head pale, with a few faint marks, antennae pale, darker toward tip and there the bases of the joints pale; thoracic lobes black, the middle one with two spots; legs pale, tips of tarsi dark. Fore wings white, heavily maculate with dark brown or black (Plate 2, fig. 17). The posterior cells almost wholly dark, a broad oblique band from before end of anal vein up toward stigma, but extending only a little above the median vein; base of stigma, and a mark below, apex of stigma, two large, and several small spots in radial fork, and several spots in area above median vein, and two spots in discal cell, one covering the lower part, are dark brown; veins white, heavily dotted with dark. Hind wings hyaline, veins white. Discal cell much longer than broad, scarcely narrowed below, outer side concave; fork of radial sector four times as long as pedicel; stigma low, and rounded behind; areola postica broad and low, pointed above.

Length to tip of wings, female 6 mm., male 5 mm.

Psocus hermosus, sp. nov.

Type.— M. C. Z. 10,784. Straits Settlements: Island of Penang, Singapore (C. F. Baker).

Head pale, a few spots on the nose, antennae pale, beyond third joint darker at tips of joints; legs pale, base and tips of tarsi dark, lobes of thorax with dark spots. Wings hyaline, densely marked with small irregular brown patches, in the posterior cells occupying most of surface, along anal area the spots are in transverse rows, also in rows across the stigma and crossing veins behind and beyond it, several clouds in the discal cell and near by, tips of veins marked with darker spots, also one at base of stigma, and a long curved black mark behind the forking of radial sector. Veins pale, interrupted with dark;

discal cell longer than broad, outer side concave; areola postica long and low, pointed above; fork of radial sector about four times as long as pedicel; stigma moderately long, low, rounded behind; the stigma is usually rather yellowish; radial sector and median vein unite for a short distance.

Length 6 mm.

Two males from Sandakan, Borneo, probably belong to this species.

PSOCUS GLORIOSUS, sp. nov.

TYPE.— M. C. Z. 10,795. Borneo: Sandakan (C. F. Baker).

Head pale, several dark spots above each eye, nose mostly dark; antennae pale on basal part, darker beyond; legs pale, tips of tarsi dark, thoracic notum mostly black, but pale across the front. Wings yellowish and whitish, yellowish mostly around the margin, and whitish on the disk; heavily marked with dark, but not irrorate, brown over most of posterior cells, and lower half of discal cell, a few pale spots left in the posterior cells; the brown margin extended around to tip of stigma; stigma yellowish, a black spot at base, anal region mostly black, the apical part extending upward a short distance, the dark mark broken by a narrow oblique pale streak and a few small pale spots, veins in this area dark, with some pale dots; the other venation pale yellowish, tips of veins black-spotted; the radial sector before it forks and slightly beyond black, and black spots along radius and inner side of discal cell; a prominent curved black spot behind the forking of radial sector and extending somewhat toward base of stigma. Venation as *P. pulchellus* and *P. hermosus*.

Length to tip of wings 6 mm.

PSOCUS LUTEOLUS, sp. nov.

TYPE.— M. C. Z. 10,793. Straits Settlements: Singapore (C. F. Baker).

Head pale, a subtriangular black mark from near ocelli down over the nose; antennae pale on basal part, joints 3, 4, and 5 with very distinct black band at tip, beyond joints mostly dark, with a narrow basal pale annulus; lobes of thorax dark; legs pale, tips of tarsi dark, wings densely conspersely marked with pale brown, much as in *Myopsocus loriai*, but more broken up, and extending over entire surface except basal costal space, stigma also marked; four distinct black marks, one at apex of stigma, one below base of stigma, one behind fork of radial sector, and the other at end of anal vein. Venation rather yellowish, broken by pale brown spots. Venation about as in *P. hermosus* and *P. pulchellus*.

Length to tip of wing 6 mm.

Psocus viscayanus, sp. nov.

Type.— M. C. Z. 10,797. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Head pale yellowish brown, with a median blackish stripe half way down on the nose; antennae black, pale on most of the third joint, in male with moderately long hair; thorax with three black spots in front; abdomen dark brown; legs pale, the tibiae and part of tarsi dark. Wings hyaline, with black marks much as in *P. feai*, but the median band is broad reaching from hind border obliquely upward, the stigmal and apical streak as in that species, base of stigma pale. The radial sector and median unite for a short distance, fork of radial sector nearly three times as long as the pedicel, discal cell much longer than broad, the stigma rather short, almost acute behind.

Length to tip of wings, male 5 mm., female 6 mm.

Psocus borneensis, sp. nov.

Type.— M. C. Z. 10,791. Borneo: Sandakan (C. F. Baker).

Head pale, dark on nose; antennae pale brown to nearly black at tip, in male with extremely long hairs; femora pale, tibiae and tarsi dark; lobes of thorax blackish. Wings in general similar to *P. lemniscatus*, but the markings reduced so that only the stigma, a connecting spot between the lower branch of the radial sector and the median vein, and an oblique mark before end of the anal vein, remain; several of the apical veins are narrowly margined with dark; in the female the marks are more extensive, and mark below stigma over first posterior cell and out to tip is more or less definite. Venation dark, fork of radial sector and end of discal cell pale, in the female more veins pale, and with some dark streaks. The wings are shorter and proportionally broader than in *P. lemniscatus*, the posterior cells nearly subequal, the areola postica acute above. It differs chiefly in the stigma which is very much higher, and shorter than in *P. lemniscatus*.

Length, female 6 mm., male 5 mm.

Psocus relativus, sp. nov.

Type.— M. C. Z. 10,792. Straits Settlements: Singapore (C. F. Baker).

Related to *P. lemniscatus* and *P. borneensis*, but with a reduced pattern of markings. In the fore wings the stigma is dark only across the tip; all the veins beyond the middle of the wings are plainly margined with dark, a connecting spot between lower branch of radial fork and the median vein, two transverse spots on the hind margin, one at the end of the anal vein, the other some distance before it, and a small mark on the median vein some distance before the discal cell; venation dark, fork of radial sector and lower side of the discal cell pale. The stigma is rather shorter and higher than in *P. lemniscatus*, but not as high as in *P. borneensis*, and is right-angled behind. The discal cell is much longer than broad, narrowed below; the posterior cells subequal, the areola postica broad above, and the fork of radial sector about twice as long as the pedicel.

Length of female to tip of wings 5 mm.

PSOCUS PARISHI, nov. sp.

TYPE.— M. C. Z. 10,805. Peru: Lima, 21–31 August; Chosica, 7 July (H. S. Parish).

Pale, marked with brown; vertex with a median brown spot behind; face with three small dark spots, nose faintly lineate, the dark forming a large spot below; antennae dark, second joint pale; hairs moderately short; legs pale, femur dark just before the tip; thorax with the usual lobes dark, the median lobe traversed by a pale median line; abdomen brown. Wings hyaline; stigma dark, its bordering veins pale, other veins mostly dark, the discal cell white at lower angle and the lower part of outer side, and the fork of radial sector white as usual, and moreover all of the apical branches are white in the middle parts of their length, and very plainly dark and dark bordered at ends. There are small dark clouds in many of the cells, and larger marks at the anal angle and just before the discal cell. The stigma is fully twice as long as broad, hardly angulate behind. The discal cell touches the radial sector at one point, its outer side concave.

Length 3.5 mm.

PSOCUS AZTECANUS, nov. sp.

TYPE.— M. C. Z. 10,802. Peru: Lima, 12–30 August (H. S. Parish).

Pale, marked with brown; nose densely lineate, vertex with a median dark stripe reaching to the ocelli, and a dark spot each side near the eye; antennae dark, short-haired; thorax brown, the sutures pale; abdomen brown; legs pale, the tarsi rather darker; wings hyaline, stigma dark, pale at the base, veins brown, the lower part of the discal cell, and the forking of the radial sector whitish hyaline; a small dark spot at the end of the anal vein; discal cell long and narrow, its basal side convex, connected to the radial sector by a long pedicel; stigma slightly rounded behind, its outer side about one half the length of its inner side. Front tarsus with first joint a little longer than the second, in hind tarsus first joint more than twice the second.

Length 4 mm.

Psocus memorialis, nov. sp.

Type.— M. C. Z. 10,804. Colombia: Caldras, 4,400 ft. (H. Fassl).

Pale, marked with brown; nose lineate, vertex shining brown in the middle; antennae dark, finely short-haired; thorax shining brown, the sutures pale; abdomen brown; legs pale, tarsi darker. Wings hardly clear, veins brown, stigma brown, and a brown spot at the anal angle, lower side of the discal cell and the forking of the radial sector whitish hyaline; stigma long, rounded behind; discal cell touching the radial sector at one point or for a short distance, the cell much longer than broad, and narrowed below, inner side plainly convex. The wings are rather more slender than usual. In front tarsus first joint is as long as second, in hind tarsus first joint is about twice as long as the second.

Length 4 mm.

Psocus lepidus, sp. nov.

Type.— M. C. Z. 10,810. Brazil (Winthem coll.).

Head pale yellowish; a black stripe each side from eyes to mouth, nose with a large, median blackish stripe, clypeus black; vertex and front with a large median dark spot extending each side on vertex in a rounded spot, and each side of vertex extending down obliquely toward base of antennae; antennae very fine, pale, beyond third joint darker, with few fine hairs; palpi black, except most of basal joint; thorax shining blackish, pale on sutures; lower part of pleura black; legs mostly black, basal part of femora and a band before tip pale, tibia with subbasal and preapical pale bands, and most of first tarsal joint pale; front tarsus has first joint fully twice as long as second joint, in hind tarsus the first joint fully four times as long as the second. Abdomen dark, some pale spots on sides and on venter. Wings hyaline; stigma angulate behind, inner side concave, outer side convex, stigma hardly its length from tip of wing; radial sector forks just before the angle of stigma, the pedicel more than one half as long as fork; discal cell connected to radial sector by a short pedicel, inner side convex, outer straight; first and second posterior cells about equal at base, and longer than the areola postica. Veins dark, forking of radial sector, lower outer and lower inner angle of discal cell, and the connecting veinlet to hind margin are whitish hyaline; stigma dark, basal part, except extreme base, yellowish; a dark mark extends the angle of stigma nearly to the next vein; distinct spot at end of anal vein, and several veins near cell margined with black.

Length 7 mm.

Psocus sticticus, sp. nov.

Type.—M. C. Z. 10,811. Brazil (Winthem coll.).

Pale brown; a reddish brown mark across vertex, and each side obliquely up from the cheeks through the base of the antennae to the ocelli, lower part of nose reddish brown, clypeus blackish; thorax dark, with pale on sutures; abdomen red-brown; legs pale, tips of tibiae and last tarsal joints dark. Wings hyaline, with large brown marks (Plate **1**, fig. 1); an oblique band from base of stigma backward, and a median longitudinal stripe, extending down the veins, covering second posterior cell, and an extension upward through the apical part of the stigma, basal part of stigma yellowish. Stigma more than its length from wing-tip, almost angulate behind, radial sector forks much before angle of stigma, first posterior cell hardly broader at base than the areola postica. Veins dark; basal part of stigmal vein yellowish; the fork of radial sector margined with pale, the basal side of discal cell pale in middle of length, the basal part of outer vein, and the connection to the hind margin whitish hyaline; the radius and median vein mostly pale on basal parts. Antennae pale, darker from middle of third joint, very slender, with very short, fine hair, the third joint about as long as width of wing. In front tarsus the first and second joints subequal, in hind tarsus the first joint more than twice as long as the second.

Length 7.5 mm.

Psocus quadrisignatus, sp. nov.

Type.— M. C. Z. 10,814. Brazil (Winthem coll.).

Pale yellowish; a brown stripe on head from ocelli down over the nose; thoracic notum has dark spots on the lobes; abdomen black at base, beyond with some dark spots; legs pale, tarsi not or barely darker; antennae pale, beyond middle of third joint darker, densely clothed with long hairs. Wings hyaline, veins mostly pale, the forks of median toward tip are darker; two large brown spots on each fore wing, a rounded one in stigma, and a subtriangular one just before basal angle of discal cell. Stigma hardly its length from wing-tip, rounded behind; radial sector forks just before bend of stigma; discal cell much longer than broad, much narrowed below, outer side concave; first and second posterior cells about equal above on median vein (Plate **3**, fig. 34). In front tarsus the first joint is twice as long as the last; in hind tarsus the first joint nearly four times as long as the last.

Length 4 mm.

Psocus coquilletti, sp. nov.

Type.— M. C. Z. 10,813. Calif.: Los Angeles (Coquillett coll.).

Brown; a curved pale mark just inward of eyes, and near bases of antennae, antennae pale, tips of joints darker, with fine, very short hairs, third joint not more than one half of width of wing; thorax dark brown, sutures pale; abdomen brown; legs pale, tips of tibiae and last tarsal joints dark, in front tarsi the basal joint longer than apical, in hind tarsi the basal joint two and a half times longer than apical joint. Wings hyaline whitish, marked with black (Plate **1**, fig. 7), two spots in stigma, three in discal cell, a broad streak from fork of radial sector out to tip of wing, and several veins margined with dark; the anal region mostly dark, and clouds in several cells near middle of wing. Veins black, stigmal vein pale, stigma almost angulate behind; discal cell very slender, outer side a little concave; first posterior cell very narrow, shorter on median vein than the areola postica.

Length 3 mm.

PSOCUS INTERRUPTUS, sp. nov.

TYPE.— M. C. Z. 10,807. Florida: Lake Worth (Mrs. A. T. Slosson).

Dark shining brown; antennae brownish, first joint more red-brown, with very short, fine hair, third joint about as long as one half the width of the wing; thorax with sutures pale; legs pale, tarsi rather darker, basal joint of front tarsus barely longer than the apical joint. Wings hyaline, with two large dark spots which together form an interrupted fascia; one of the spots on the stigma, and the other over the first posterior cell and a little inward from it; a smaller spot at end of the anal vein (Plate **2**, fig. 15). Stigma about its length from the wing-tip, rounded behind; radial sector forks behind bend of stigma, the pedicel very long; discal cell long, much narrowed below, short petiolate to the radial sector, inner side strongly convex; first posterior cell on median vein shorter than the second; veins pale brown; end of discal cell and fork of radial sector hyaline.

Length 3.4 mm.

SYNGONOSOMA REDUCTA, sp. nov.

Type.— M. C. Z. 10,806. Mexico: Orizaba (D. L. Crawford).

♂. Similar to *S. flagellicorne*, the antennae the same except that the hair on third joints is a little shorter. It differs from that species in the reduced extent of yellow on the veins, the fork of radial sector being yellow only at base, and no yellow on the forks of the median vein, and the inner side of discal cell darker; the stigma is hardly darker than rest of wing, and is rounded behind, and longer than in *S. flagellicorne;* the head is also darker; the areola postica is petiolate as in that species.

Length 7 mm.

A female from Orosi, Costa Rica, is much larger (10 mm. long); the stigma is more yellowish; the areola postica not petiolate, but otherwise agrees.

DINOPSOCUS, gen. nov.

In general similar to Sigmatoneura, but the third joint of the antennae is plainly thickened, especially toward tip, and densely hairy. The discal cell is closed; the median vein united to radial sector or connected by a cross-vein; stigma long and slender; areola postica short or broad above, but not pedicellate.

TYPE.— *D. atratus*, sp. nov.

This genus is much like our American Cerastipsocus, but differs in the antennae; it is also near Syngonosoma, which has the fourth joint of antennae also thickened.

DINOPSOCUS ATRATUS, sp. nov.

TYPE.— M. C. Z. 10,800. Borneo: Sandakan. Philippines — Mt. Banahao (C. F. Baker).

Blackish; a pale stripe through pleura and on sides of the abdomen, femora pale at base; wings blackish, stigma and space behind it deeper black; venation dark, lower branch of fork of radial sector, lower end of discal cell, median vein from discal cell out to near tip, and the bases of the branches of median vein, are pale yellowish, in one specimen the upper and outer sides of discal cell are also rather pale. Antennae long, third joint subclavate, densely haired, fourth joint and beyond very slender, with few short hairs. Wings elongate; stigma long and slender, rounded behind, fork of radial sector broad at base, and nearly three times as long as pedicel; discal cell long and slender, sides nearly straight; areola postica high, fairly broad above; hind wings evenly blackish; hind tibiae slightly flattened.

Length 8.5 to 9 mm.

A broken female from Singapore is probably the same species.

DINOPSOCUS SEMICOLORATUS, sp. nov.

TYPE.— M. C. Z. 10,801. Philippines — Luzon: Makiling (C. F. Baker).

Blackish, antennae and palpi deep black. Wings hyaline, a large black mark over more than the basal third connected along costal area with a large black mark over stigma and beyond and with an extension toward the areola postica, and the apical part extended down over the third and a little of second posterior cell. Stigma moderately long, not very high, almost rounded behind, fork of radial sector about twice as long as the pedicel, not widened at base, areola postica high, narrow above, discal cell longer than broad, inner side slightly convex; veins black, fork of radial sector pale at one point. Antennae long, third joint slightly curved, subclavate, with long black hair, but not as dense as in *D. atratus*, fourth joint slender, with moderately long hair.

Length to tip of wing 7.5 mm.

PODOPTEROCUS, gen. nov.

Venation as in Psocus; median and radial sector connected by a cross-vein, stigma long and slender; wings long and slender, without hairs. Antennae very long, the third joint somewhat thickened, especially in middle, densely hairy, fourth and fifth joints very long and tenuous, beyond the antenna is broken up into a great number of short fusiform joints. The hind tibia bears a wing-like expansion on each side (Plate **1,** fig. 4).

TYPE.— *P. longicornis*, sp. nov.

PODOPTEROCUS LONGICORNIS, sp. nov.

TYPE.— M. C. Z. 10,785. Straits Settlements: Singapore (C. F. Baker).

Brown, few, if any, markings; antennae brown, third joint with black hair; legs brown, femora darker at tips. Wings faintly brown, base black for short distance out, stigma black, as also an area behind it, the margin beyond stigma also blackish. Veins mostly brown; discal cell nearly twice as long as broad, scarcely narrowed below, outer side rather concave; stigma very low and slender; fork of radial sector fully twice as long as the pedicel; areola postica as high as long, moderately broad above. Expansion of hind tibia on lower side broadest near base, on upper side broadest beyond the middle.

Length to tip of wings 6.5 mm.

GRAPHOPSOCUS SUBAEQUALIS, sp. nov.

TYPE.— M. C. Z. 10,790. Straits Settlements: Singapore (C. F. Baker).

Pale; a dark mark over ocelli, reaching each side to eye; lobes of thorax with shining black spots; legs pale; wings hyaline, veins dark, nearly black; stigma unmarked. Wings and venation about as in *G. infirmus;* it differs in having the fork of the radial sector about equal in length to the pedicel, and the areola postica is large, longer than high, and very short pedicellate; stigma shaped as in other species, and the connecting veinlet behind stigma ends about opposite the second branch of the median vein.

Length to tip of wings 4 mm.

GRAPHOPSOCUS INFIRMUS, sp. nov.

TYPE.— M. C. Z. 10,789. Philippines — Luzon: Nueva Vizcaya; Imugin. Benguet; Baguio.

Pale yellowish, a black mark over ocelli, extending each side to eye; antennae pale on base, beyond third joint dark, antennae of male not as heavy as in *G. uniformis;* each lobe of thorax with a polished dark spot. Wings whitish hyaline, whitish on basal part, and here the veins are largely hyaline, beyond the veins are dark and almost margined with dark; stigma not marked; a small dark spot at end of anal vein. Wings not as slender as in *G. uniformis*, venation similar; areola postica scarcely longer than high, long pedicellate; stigma shaped as in *G. uniformis*, the cross-vein behind ends just before second branch of median vein; the fork of radial sector not more than two thirds as long as the pedicel. Female similar, but the antennae paler, and more slender.

Length to tip of wing 4 mm.

GRAPHOPSOCUS UNIFORMIS var. FRONTALIS, var. nov.

TYPE.— M. C. Z. 10,788. Philippines — Luzon: Nueva Vizcaya; Imugin. Benguet; Baguio (C. F. Baker). Ceylon (Nietner).

Differs from the typical form in having a large black mark across face, usually connected to black around and back of the eyes. The radial sector is much darker than the other veins, and the stigma is more yellow than in *G. uniformis.* One specimen has a large black spot on radius a little before the stigma.

This is what Hagen recorded as a variety of the female. I have, however, both sexes from the Philippines.

EPIPSOCUS PICTUS, sp. nov.

TYPE.— M. C. Z. 10,812. Brazil (Winthem coll.).

Pale yellow; head with a median black stripe from ocelli down over nose and clypeus, broader below than above; on vertex is a pair of submedian brown stripes, connected at ends, and each side from the ocelli extends a brown mark to the lower edge of the eyes; lobes of thorax with brown marks; legs yellowish, tarsi slightly darker; the abdomen black above, mostly pale beneath. Wings hyaline, veins yellowish brown, partly pale; the marginal vein mostly brown; faint brown marks at end and beginning of stigma, and over ends of apical veins, and more faintly between them, a spot at anal angle; the stigma is more flattened behind, and the areola posterior more flattened above than in *E. nepos;* several of the veins are more sinuate than in that species.

Length 4.5 mm.

EPIPSOCUS FUMIPENNIS, sp. nov.

TYPE.— M. C. Z. 10,799. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Brown; antennae and legs paler. Wings of a nearly uniform brown tint, tips of veins with blackish spots; hind wings nearly hyaline. In general very similar to *E. delicatus* and *E. completus;* areola postica as long as stigma, its upper side nearly straight for some distance; the stigma long, and slender, its posterior side evenly rounded; the median vein and radial sector united by a long cross-vein; the fork of radial sector is plainly longer than its pedicel; the first branch of the median vein arises before the fork of the radial sector; basal joint of hind tarsus hardly as long as the stigma.

Length 4 mm.

Differs from *E. delicatus* and *E. completus* in the uniformly colored wings, and the very long fork of the radial sector.

EPIPSOCUS HYALINUS, sp. nov.

TYPE.— M. C. Z. 10,798. Straits Settlements: Singapore (C. F. Baker).

Brownish; black spot across upper part of nose, below pale, head white-haired; antennae and legs pale. Wings hyaline; vein pale brown, minute dark dots at ends of most of veins, and one on costa some distance before the stigma. Wings about as broad as in *E. delicatus*, not slender; stigma moderately long, evenly rounded behind; areola postica much shorter than stigma, twice as long as high; median vein and radial sector joined by a long cross-vein; fork of radial sector very short, hardly one half as long as pedicel, base opposite origin of second branch of the median vein, first branch of median vein arises beyond middle of areola postica; first joint of hind tarsus about as long as stigma.

Length to tip of wings 3.7 mm.

CAECILIUS REDUCTUS, sp. nov.

TYPE.— M. C. Z. 10,787. Philippines — Luzon: Mt. Makiling (C. F. Baker).

Head dark brown, thorax and abdomen paler brown; legs pale, tarsi dark, basal joint of antennae pale, beyond darker; eyes of male moderately large, about their diameter apart. Wings hyaline, with a broad dark streak through the middle to tip, leaving a pale space in front as broad, and a pale area behind still broader; anal area with an elongate dark spot; a pale spot in tip of the dark stripe; the upper branch of fork of radial sector margined with dark. Wings rather slender, broadly rounded at tip; stigma slender, rounded behind; areola postica very small, semicircular; fork of radial sector about as long as the pedicel; first branch of median vein oppose base of fork of radial sector. Veins pale in pale areas, dark in dark spaces; hind wings hyaline, veins pale.

Length 3 mm.

CAECILIUS CINCTICORNIS, sp. nov.

TYPE.— M. C. Z. 10,782. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Pale yellowish brown. Head polished, a median round black spot on the nose; antennae pale, a rather broad black band at tip of each joint; thoracic lobes each with a large polished black spot; abdomen dark, a median pale stripe above; legs pale, tips of tarsi dark. Wings yellowish to brownish fumose, darkest in posterior cells, mostly yellowish on base, stigma yellowish, pubescent; veins mostly pale yellowish, but beyond middle mostly dark. Hind wings hyaline, yellowish on the costal base, veins pale. Wings long, stigma slender, but slightly angled behind; areola postica very small, and not twice as long as high; fork of radial sector as long as pedicel, and its base opposite first branch of the median vein.

Length to tip of wing 5 mm.

CAECILIUS PRETIOSUS, sp. nov.

TYPE.— M. C. Z. 10,809. Texas: San Antonio. D. C.: Washington (in greenhouse).

Pale yellowish, lobes of thoracic notum brownish. Wings hyaline, a faint cloud over stigma reaching somewhat behind, and another cloud over the areola postica reaching inward; a faint mark at end of anal vein. Veins mostly very pale, the radial sector and the median veins before they meet are heavily dark, forming a very distinct V-mark; the branches of median vein more or less dark. The stigma is very long, as long as in *C. aurantiacus*, the areola postica short and much lower than in *C. aurantiacus*, the end of the areola postica is opposite that of the stigma, so that the median vein forks far out, and its branches are very short and close together; the radial sector forks scarcely before end of the stigma.

Length 3 mm.

CAECILIUS DECEPTOR, sp. nov.

TYPE.— M. C. Z. 10,781. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Marked on the plan of *C. muggenburgi*, *C. dolobratus* and the species of Dypsocus. Head brown; antennae black, except the basal joints which are reddish; head flattened, finely short haired; femora yellowish, tibiae more brown, especially at tips, tarsi dark at tips, rest pale. Wings rather slender, with broad black stripe, leaving behind a narrow hyaline strip over ends of the posterior cells, and the cells on the front margin beyond stigma hyaline, the stigma wholly dark, areola postica nearly hyaline. Radial sector and median vein united for some distance, areola postica very small, little longer than high, stigma moderately long, almost acute behind, apical side short. Hind wings mostly brown.

Length 3 mm.

Nearest to *C. dolobratus;* differs in the stigmal markings, and shorter stigma, and antennae less heavy.

ALLOPSOCUS, gen. nov.

Group of Psyllipsocus, Tapinella, etc. Body rather broad and flat. Head broad, eyes small, bare, ocelli three, antennae with third and fourth joints long, beyond small indistinct joints. Wings broad and rounded; radius ends blindly, thus no stigma, radial sector arises at right angle to radius, once forked; median vein and radial sector connected by a short cross-vein; no branches to median, nor to cubitus; anal and axillary veins unite in the margin, veins and margin of wing ciliate. In the fore wing there is a narrow posterior outer margin, not traversed by veins, this space is hyaline, while the rest of wing is dark. Hind wings (Plate **1**, fig. 10).

TYPE.— *A. marginalis,* sp. nov.

ALLOPSOCUS MARGINALIS, sp. nov.

TYPE.— M. C. Z. 10,786. Philippines — Luzon: Mt. Makiling (C. F. Baker).

Head whitish, labrum black, under side of head with a dark mark on each side, antennae whitish, third and fourth joints with long bristly hair, mostly on inner side, head above with scattered bristly hair; thorax in front pale, pleura dark; front legs pale, middle legs with dark femora, hind legs wholly dark; abdomen dark. Fore wings dark brown, with the exception of the hyaline or whitish narrow outer posterior margin. Veins darker brown, with few hairs, more numerous on margin of wing. Hind wings slightly fumose all over. Venation (Plate **1,** fig. 10).

Length 2.5 mm.

PERIPSOCUS PUMILIS, sp. nov.

TYPE.— M. C. Z. 10,808. Florida: Monticello (Scammell).

Pale yellowish red, thoracic notum hardly darker, antennae brownish, wings almost hyaline, faintly infuscate, stigma with dark basal spot; veins pale. Head broad, with few erect bristly hairs; antennae minutely hairy, about two thirds the length of the wing. Wings narrow, tip broadly rounded; stigma slender; radial sector forks before end of stigma, the fork being longer than the pedicel; median vein with short branches toward tip; median and radial sector meet at one point.

Length 1.7 mm.

In general similar to *P. californicus*, but smaller, and lacks dark spots at ends of veins, and fork of radial sector much longer, and median forks farther out than in that species.

PERIPSOCUS PERUANUS, nov. sp.

TYPE.— M. C. Z. 10,803. Peru: Lima, 21–30 August (H. S. Parish).

Pale brown; thorax above darker brown; legs pale brownish, scarcely darker at the tips; wings uniform pale brown, the veins darker brown, stigma hardly darker than rest of the wing, a dark dot at end of the anal vein. Wings rather short, and broadly rounded at tip, the stigma not its length from the tip, rounded behind; the radial sector forks just beyond the band of the stigma, the outer branch of the median vein arises a little beyond this, the first branch opposite the bend of the stigma; the median and radial sectors united for a distance equal to the width of the stigma; also about as far in the hind wing.

Length 2.7 mm.

DYPSOCUS PARVULUS, sp. nov.

TYPE.— M. C. Z. 10,794. Straits Settlements: Singapore (C. F. Baker).

In general appearance similar to *D. apicatus* and *D. coleoptratus;* differs from them in having the antennae very slender throughout. The head is flattened, with short, dense hair, the antennae are pale brown, minutely hairy. The fore wings have a broad dark stripe over most of surface, leaving the apical costal region clear, but a dark band across the tip of the stigma, the posterior margin is scarcely hyaline except in the areola postica and a little before it.

The radial sector and median are connected by a cross-vein, the apical branches are not short and crowded as in the other species of the genus, but like Caecilius, the areola postica is very small and short, and the stigma of moderate length, rounded behind.

Length, to tip of wings 3 mm.

I place *parvulus* in this genus on account of the separation of radial sector and median vein and the structure of the head, but the rest of the venation and the antennae are like Caecilius. The *D. dolobratus* Hagen is a Caecilius very close to *C. himaylanus* Enderl., besides the types I have *dolobratus* from Singapore and Island of Penang.

CALOPSOCUS IRIDESCENS, sp. nov.

TYPE.— M. C. Z. 10,783. Borneo: Sandakan (C. F. Baker).

Head brown; thorax and abdomen dark brown; legs brown, anterior tibiae and tarsi rather paler. Wings deep black, iridescent blue in certain lights. Vertex, seen from in front, broadly, but not deeply, concave (not narrowly incised as in *C. infelix*). Wings proportionally longer than in *C. infelix*, and densely reticulately veined, even from before the middle to near the outer edge.

Length of wing 4 mm.

PERLIDAE.

ISOGENUS HASTATUS, sp. nov.

TYPE.— M. C. Z. 10,820. N. C.: Andrews, middle of May (F. Sherman). N. H.: White Mts. (E. P. Austin).

In many ways similar to *I. frontalis* but darker, especially the wings. The head has the posterior yellow spot continued into a hastate mark between the posterior ocelli, a pale spot each side on lower face. The seventh ventral segment is slightly convex in the middle and there orange in color, the following segments have apical margins narrowly orange, and the basal segments are pale on tips. The ocelli form a triangle nearly equilateral, and the wings have no cross-vein from near tip of radial sector to radius, otherwise much as in *I. frontalis*.

Expanse 36 mm.

Although differing in venation the genital characters are so similar to those of Isogenus that I include it in that genus as Dr. Hagen had done in the collection.

KATHROPERLA, gen. nov.

Tarsi with apical joint much longer than the other two segments together; setae rather short. Palpi similar to Perla; eyes small; ocelli three; median vein running parallel to radius at base, anal cell with two separated branches, no cross-veins in apical part of wings except beyond end of the subcosta; in hind wings but two median cross-veins far apart. Differs from Perla and other Perlidae in the great length of the head behind the eyes, being nearly as long as the pronotum.

TYPE.— *K. perdita*, sp. nov.

KATHROPERLA PERDITA, sp. nov.

TYPE.— M. C. Z. 10,819. British Columbia: Kaslo (Taylor).

Brown; face in front of the anterior ocellus and laterally up to the posterior ocelli yellowish; palpi and antennae brown; pronotum with median pale stripe, and one each side near the lateral edge; meso- and metanotum with basal median pale spot; abdomen dark brown. Wings but little infumate, darker beyond the end of the subcosta; about eight costal cross-veins; three or four beyond end of the subcosta; radial sector with one branch and that nearer to the anastomosis than to tip, anastomosis disjointed; about eight median and cubital cross-veins. Posterior ocelli as near to each other as to the eyes; ocellar triangle nearly equilateral; from each posterior ocellus a ridge extends obliquely to the anterior edge of the eye. Pronotum about once and two thirds as broad as long, sides and corners rounded. Ventral plate of female large, emarginate at tip.

Expanse 36 mm.

ACRONEURIA MANCHURIANA, sp. nov.

TYPE.— U. S. N. M. PARATYPE.— M. C. Z. 10,833. Six specimens. Manchuria and Korea: Yalu River, 150 to 200 miles from mouth (A. DeC. Sowerby coll.).

Dull brown. Head more or less dull yellowish, especially behind the ocelli, ocelli more or less plainly connected by a black V-mark. Abdomen almost black above, yellowish brown beneath; legs and cerci similar. Wings brown infumate, rather paler in middle of cells so that some veins appear broadly margined with dark; venation brownish, not pale on costal part. Ocelli in a nearly equilateral triangle, hind ocelli larger than front one, hind ocelli about as near eyes as to each other; lateral bosses curved, about as near ocelli as to eyes, anterior bosses large, oblique, widely separated. Pronotum about one and one half times as broad as long, little if any narrowed behind, anterior angles acute, behind rounded. Ventral plate of male not extended upward, the boss apical, pale, and transversely wrinkled, each side the ventral plate shows a pale, shallow impression. The appendages are elongate and recurved, their tips approximate, each tip with an oval scar on the inner surface. Ventral plate of female but little enlarged, its margin slightly concave in the middle and yellowish, the next segment pale on middle and apical margin. Wings of good size, no cross-veins in apical field, radial sector usually two-branched, upper anastomosis oblique; about ten costal cross-veins.

Expanse ♂ 52 mm.; ♀ 60 mm.

OYAMIA NIGRIBASIS, n. sp.

TYPE.— U. S. N. M. ALLOTYPE.— M. C. Z. 10,831. Two specimens. Manchuria and Korea: Yalu River, 150 to 200 miles from mouth, May 1914 (A. DeC. Sowerby coll.).

Black, a pale spot on clypeus, and one extending from each hind ocellus to the eye. Basal joint of antenna dark, beyond the antenna is pale for one third to one fourth the way out, beyond black. Wings largely yellow-veined, in female less so, and the membrane darker than in the male, costal area of both yellow. Abdomen yellow, in female blackish on base beneath. Legs bright yellow, with distinct dark bands on the bases and tips of femora and tibia, tarsi dark. Ocellar triangle nearly equilateral; hind ocelli hardly larger than the front one, plainly nearer to each other than to the eyes; lateral bosses elliptic, nearer to hind ocelli than to the eyes, anterior bosses long, out-curved, upper inner ends bent inward. Pronotum about one and one fourth broader than long, a little narrowed behind, corners angulate. Wings fairly long, anastomosis oblique, about twelve costal cross-veins, four subcostals; radial sector two or three branched beyond the anastomosis. Tips of male appendages broad, flat, not notched.

Expanse ♂ 42 mm., ♀ 54 mm.

In this and in *O. flavotincta* McLachlan the third joint of the palpi is plainly curved. It is not mentioned in other species, but I persume it is a peculiarity of the genus.

PERLA DUPLICATA, sp. nov.

TYPE.— M. C. Z. 10,818. Va.: Fairfax Co.; Newington, 4 June (S. A. Rohwer).

Pale brown; head largely pale, dark between the ocelli, on middle of lower face, and back of the eyes; basal joint of antennae pale, rest and the palpi brown; pronotum with broad pale median stripe, most of meso- and the metanotum pale; abdomen pale, brown toward tip; sternum and venter pale; legs pale brownish, tips of tarsi darker. Wings brown, costal area, especially of the hind wings, darker than elsewhere, venation dark brown. Posterior ocelli a little nearer to the eyes than to each other, ocellar triangle broader behind than long; lateral bosses slender, transverse, appearing to reach in a curved line toward the posterior ocelli; pronotum one and one third broader than long, rather narrower behind, sides parallel, anterior edge convex; setae rather short. Radial sector three-branched, four cross-veins beyond end of the subcosta, anastomosis continuous, seven to nine median and cubital cross-veins; the male shows on both seventh and eighth ventral segment a small median process.

Expanse 23 mm.

PERLA SUBVARIANS, sp. nov.

TYPE.— M. C. Z. 10,817. Va.: Great Falls. Md.: Great Falls, High Island, 15 April to 12 May.

This species is what I have recorded as *P. varians* in the Washington list. It is similar in many ways to that species, but on comparison with types of Walsh's species it differs in several points. The ventral plate of the female is more triangular, and longer in the middle, the pale median spot on vertex of head in both is in *P. subvarians* continued forward as a narrow streak into the ocellar area, the stripe on thorax is more narrow, and the posterior ocelli are nearer to each other than in *P. varians* although still a little nearer to the eyes than to each other; the pronotum is proportionally a little longer than in *P. varians.*

Expanse 38 mm.

PERLA EXPANSA, sp. nov.

TYPE.— M. C. Z. 10,816. Col.: Grant, 16 August (E. C. Jackson).

Black; head with a very broad reddish yellow median stripe, interrupted only at the anterior ocellus by a narrow transverse black band; pronotum with broad median stripe pale; last segments of the abdomen pale brownish; setae pale brown. Wings slightly infuscated, the veins (except costals) dark brown; radial sector three-branched, two cross-veins beyond end of the subcosta, about six median and cubital cross-veins, second anal vein curved. Posterior ocelli much nearer to the eyes than to each other, the ocellar triangle much broader behind than long, lateral bosses transverse, not far from posterior ocelli; the pronotum one and one third broader than long, sides nearly parallel; female ventral plate extremely large, rounded, and convex.

Expanse 32 mm.

Very similar to *Perla modesta*, also from Colorado, but the ventral plate is very much larger; and the venation much darker.

Perla verticalis, sp. nov.

Type.— M. C. Z. 10,815. N. H.: Franconia (Mrs. A. T. Slosson).

Brown; most of lower face and most of vertex back of ocelli pale yellowish and even between posterior ocelli, only sides of head back of eyes dark; a median pale stripe on the pronotum, broader in front; ventral plate of female pale; legs and antennae pale brownish; wings nearly hyaline, veins brown; radial sector two-branched, six median and cubital cross-veins; anastomosis continuous. Posterior ocelli much nearer to the eyes than to each other, ocellar triangle broader than long; lateral bosses about as near antennal ridges as to the posterior ocelli; pronotum one and one half broader than long, sides nearly parallel, front and hind margins both convex; female ventral plate very large and long.

Expanse 30 mm.

Near to *P. modesta* of Colorado, but it is smaller and the ventral plate much longer.

Perla incesta, sp. nov.

Type.— M. C. Z. 10,838. Oregon (Hagen coll.).

Brown; in general similar to *P. varians*, *P. similis* etc. in having a narrow median stripe of pale on the pronotum, and a pale median spot on top of the head, and a pale spot each side on lower face; abdomen brown, pale on venter near tip, setae and legs pale. Wings also similar to these species, nearly hyaline, with yellowish venation, radial sector three-branched, three cross-veins beyond end of subcosta, latter ending at anastomosis, latter disjointed, six to eight median and cubital cross-veins, first anal vein strongly sinuate just beyond the anal cell. The posterior ocelli are nearly twice as near to eyes as to each other, the ocellar triangle almost twice as broad behind as long; lateral bosses small and as close to antennal ridges as to posterior ocelli. Pronotum one and one fourth broader than long, sides nearly parallel.

Expanse 30 mm.

It differs from all the related forms in the shape of the ventral plate which is nearly straight across at tip with a distinct median emargination.

Perla anamensis, sp. nov.

Type.— M. C. Z. 10,830. Anam (Frustorpher).

Pale yellowish, a large black spot over the ocellar area; pronotum and rest of thorax rather brownish; wings nearly hyaline, veins yellow; legs pale, femora tipped with dark. Ocelli large, posterior ocelli plainly closer to each other than to the eyes, ocellar triangle longer than broad behind; lateral bosses large, full as near posterior ocelli as to the eyes, and three times as far from the antennal ridges. Pronotum one and one fifth broader than long, sides nearly parallel, a little narrowed behind, surface strongly rugose. Wings long, radial sector two- or three-branched, three cross-veins beyond end of subcosta, anastomosis oblique, seven or eight median and cubital cross-veins, second and third anal veins strongly curved. Ventral plate of the female (Plate **4**, fig. 44).

Expanse 54 mm.

PERLA NIRVANA, sp. nov.

TYPE.— M. C. Z. 10,834. India: Kooloo (M. M. Carleton).

Pale yellowish brown, a large black spot over ocellar area, and extending broadly each side to the eyes, leaving the bosses yellow; a small dark spot above bases of antennae, sternum, and venter yellow, setae and legs yellowish, the femora at tips, and the tibiae at bases and tips narrowly blackish; wings nearly hyaline, veins yellowish. Ocelli large, plainly closer to each other than to the eyes, ocellar triangle a little longer than broad behind, lateral bosses rather large, oblique, a little nearer to posterior ocelli than to the eyes, and fully twice as far from the antennal ridges. Pronotum one and one half broader than long, sides nearly parallel, surface strongly rugose. Wings long, radial sector four-branched, five or six cross-veins beyond end of subcosta, eight or ten median and cubital cross-veins, second and third anal veins slightly curved, far apart at origin. The male has a large scar near tip, and each side is a curved depression.

Expanse 45 mm.

PERLA CARLETONI, sp. nov.

TYPE.— M. C. Z. 10,836. India: Kooloo (M. M. Carleton).

Yellowish brown; ocellar space black, and black on middle of front margin of head, legs blackish; abdomen marked with black and apical part of ventral plate black, setae brown; wings faintly brown, venation yellow-brown. Ocelli very large, posterior ocelli a little nearer to each other than to the eyes; the ocellar triangle longer than broad behind; lateral bosses large, as near posterior ocelli as to eyes and still farther from antennal ridges. Pronotum one and one half broader than long, slightly narrowed behind, strongly rugose above. Wings long, radial sector three-branched, six or seven cross-veins beyond end of the subcosta, the anastomosis oblique, seven or eight median and cubital cross-veins, third anal vein much curved, second but little; female ventral plate (Plate **4**, fig. 51).

Expanse 52 mm.

PERLA REPANDA, sp. nov.

TYPE.— M. C. Z. 10,837. Chile (Hagen coll.).

Pale yellowish throughout (probably pale greenish when alive); antennae and palpi scarcely brownish, no definite marks anywhere. Head rather small; ocellar triangle longer than broad; posterior ocelli much larger than anterior ocellus, and more than two diameters apart, still farther from the eyes; lateral bosses elliptic, about size of posterior ocelli, plainly nearer to ocelli than to the eyes. Pronotum fully one and one half times broader than long, slightly narrowed behind, anterior angles acute, strongly rugose above. Wings long and large; about twelve costal cross-veins before the end of the subcosta, six or seven beyond; the anastomosis is very oblique, but little disjointed; radial sector with two or three branches beyond anastomosis; the anal region shows the basoanal vein arising long before the second vein from the anal cell, the latter vein runs down nearly at right angles and then suddenly curves outward (not seen in any other species). The last ventral segment of the male shows a large elliptic smooth space, and curved depressed area each side.

Length of body 18 mm.; expanse 57 mm.

NEOPERLA BASALIS, sp. nov.

TYPE.— M. C. Z. 10,832. India: Lebong, 5,000 ft. (Rosenberg).

Deep black, wings black; base and sides of pronotum, bases of wings, rest of thorax and most of abdomen yellow, setae and antennae yellowish, legs yellowish, front and mid tibiae and a line above on femora black, as also the tarsi. Ocelli over three diameters apart, nearly twice as far from the eyes; lateral bosses slender, almost twice as close to eyes as to the posterior ocelli, and full as close to antennal ridge. Pronotum one and one half as broad as long, plainly narrowed behind, front margin convex; ventral plate of female not projecting, but straight across, with a distinct, small, median, triangular incision. Radial sector twice branched, two cross-veins beyond end of subcosta, anastomosis straight across, hardly disjointed, nine or ten median and cubital cross-veins.

Expanse 24 mm.

Closely resembles *N. nigriceps*, but rather larger and the yellow on venter, base of wings, and pronotum readily separate it.

NEOPERLA HAGENI, sp. nov.

TYPE.— M. C. Z. 10,840. Borneo: Mindai, 18 June 1882 (Grabowsky coll.).

Pale dull yellowish throughout, antennae beyond the basal third brownish, tips of tarsi dark. Head rather narrow; ocelli moderately large, but little more than diameter apart, and plainly farther from the eyes; lateral bosses small, situate much lower than the ocelli, and twice as far from ocelli as from eyes. Pronotum one and one half times broader than long, slightly narrowed behind; setae about as long as the abdomen. Wings moderately long, one branch to radial sector, which is much nearer to anastomosis than to the tip; anastomosis disjointed, the upper part nearly straight across, three median and cubital cross-veins, all far apart; subcosta runs out to the anastomosis, one weak cross-vein beyond it.

Length of body 6 mm., of fore wing 8 mm.

NEOPERLA VISCAYANA, sp. nov.

TYPE.— M. C. Z. 10,827. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Dull sordid yellowish, a black mark including the ocelli, blackish in front on middle of head; palpi brown; antennae black except the basal joint pale; pronotum scarcely embrowned each side; all tibiae brownish, femora yellow, tarsi dark on tips. Wings almost hyaline, veins dull brownish yellow. Ocelli large, about one and one fourth diameter apart, more than two diameters from eyes; lateral bosses about size of ocelli, transversely elliptic, as near to ocelli as to the eyes; pronotum one and one half times broader than long, narrowed behind. Wings with radial sector two- or three-branched beyond the anastomosis, latter scarcely disjointed, the upper part straight across, two or three cross-veins beyond end of subcosta, six to eight median and cubital cross-veins. Ventral plate of female slightly convex on hind edge.

Length of body 10 mm.; of fore wing 13 mm.

A male, probably of the same species, from the island of Penang, is eight millimeters long; the tibiae are scarcely darkened, the pronotum rather longer, and lateral bosses larger.

NEOPERLA REMOTA, sp. nov.

TYPE.— M. C. Z. 10,835. Brazil: New Freiburg (Bescke coll.).

Related to *N. dilaticollis*, but ocelli more remote. Reddish brown; head more or less blackish in front, pronotum darker on sides, but not with a definite stripe; mesonotum with two dark spots; abdomen pale, the segments below marked with black; antennae and palpi brown. Wings tinted as in *N. dilaticollis*, veins dark, costa not paler; four costals beyond end of subcosta, ten before; about nine median cross-veins and five cubital ones; radial sector forks twice beyond anastomosis; anastomosis not disjointed, upper part not oblique; legs pale, rather golden, front femur and tibia plainly dark before tip, others less so. Ocelli small, more than five diameters from each other, and about as far from eyes; lateral bosses about the size of the ocelli, rounded, half way from ocelli to eyes; pronotum one and one fourth times broader than long, anterior angles sharp, posterior rounded, plainly broader in front than behind; ventral plate long, with a small median sinus.

Length of body 10 mm., fore wing 13 mm.

Neoperla camposi, sp. nov.

Type.— M. C. Z. 10,829. Ecuador: Pifo (F. Campos R.).

Yellowish brown. Similar in many ways to *N. longicauda* and *N. bolivari*, wings faintly tinted with brown, venation mostly brown, as in those species, but the radial sector is pale as far out as the anastomosis, beyond which it is dark. Palpi and antennae dark; the head barely marked with brown in front; the sides of pronotum broadly brown; the meso- and metanotum brownish, with a pale median stripe through to the abdomen, which is yellowish at base, darker at tip; cerci brownish, paler toward tip; legs pale, femur with black near tip above, tibia pale, unmarked. Ocelli scarcely diameter apart, more than two diameters from the eyes, lateral bosses large, oblique, hardly more than one half an ocellus diameter from either eye or ocelli. The wing shows twelve costal cross-veins and three others beyond end of the subcosta; six to eight median and cubital cross-veins; radial sector three- or four-branched beyond anastomosis, anastomosis scarcely disjointed, the upper part oblique. Last segment of male shows a slight elliptical tubercle near tip.

Length of body 15 mm., of fore wing 24 mm.

Isoperla mormona, sp. nov.

Type.— M. C. Z. 10,822. Utah: Vineyard, 22 June (Tom Spalding).

Yellowish green; head slightly darker in the middle; pronotum hardly darker on sides; antennae and palpi pale brownish; abdomen setae and legs yellowish, tarsi darker. Wings yellowish green, with brownish venation; radial sector but once forked and one cross-vein beyond end of subcosta; about five median and cubital cross-veins. Head but little broader than pronotum; ocelli in nearly equilateral triangle, posterior ocelli about one fourth nearer to eyes than to each other; lateral bosses small, rather nearer to the antennal ridges than to the posterior ocelli; pronotum one and one half broader than long, sides parallel; ventral plate of the female barely produced.

Expanse 18 mm.

Isoperla isolata, sp. nov.

Type.— M. C. Z, 10,824. N. C.: Hot Springs (Mrs. A. T. Slosson); Black Mts., May.

Brown; top of head and sides by the eyes yellow, and a median extension into the ocellar triangle, lower part of face pale; antennae brown; palpi black; pronotum brown on sides, pale in middle, this pale stripe extending back over rest of thorax; abdomen brown, the last few ventral segments with pale spots on apical margins; setae black; legs black, femora more brown. Head broader than prothorax, ocelli rather large, the ocellar triangle little broader than long, the posterior ocelli about twice as close to the eyes as to each other, lateral bosses about one half way from the posterior ocelli to antennal ridges. Pronotum one and one half times broader than long, sides nearly parallel. Wings brownish, rather darker on costal part, yellowish on extreme costal base; veins dark brown; radial sector twice forked beyond anastomosis, two or three cross-veins beyond end of subcosta, about seven or eight median and cubital cross-veins; anal cell very small.

Expanse 22 mm.

Differs from *I. maculata* in having ocelli much closer to eyes, from *I. brunneipennis* in pale thoracic stripe.

ALLOPERLA FIDELIS, sp. nov.

TYPE.— M. C. Z. 10,823. Calif.: Tahoe, Great Alpine Creek, 24 June (F. Grinnell).

Pale greenish; no distinct marks on the head, but rather brownish in front, antennae beyond basal portion blackish; pronotum with faint dark mark on each lateral disc, and with the edges dark, meso- and metanotum with black U-shaped mark around the scutelli, abdomen with a median black stripe above; tips of tarsi dark. Wings hyaline, venation greenish. Ocelli form a triangle broader behind than long, the posterior ocelli hardly closer to the eyes than to each other; lateral bosses rather nearer to antennal ridges than to the posterior ocelli. Pronotum more than twice as broad as long, sides rounded, and rather narrowed behind. Female ventral plate with a distinct median emargination. Radial sector nearer to the anastomosis than to tip; six or seven median, and four cubital cross-veins; anastomosis disjointed.

Expanse 22 mm.

By marks of pronotum and absence of marks on the head it is allied to *A. pacifica,* which is smaller, and has the ventral plate entire.

NEMOURA JAVANICA, sp. nov.

TYPE.— M. C. Z. 10,825. Java: Batavia (Rosenberg).

Dull black, pronotum rather paler, legs pale, unmarked, tips of joints scarcely darker; ocelli form an equilateral triangle, hind ocelli two thirds as far from eyes as from each other; pronotum one and one fifth broader than long, quadrangular, corners but little rounded, front margin convex. Wings long and slender, nearly uniform brown, the costal area rather darker, the costal cross-veins much more than its length beyond end of the subcosta, four to five median cross-veins, seven to nine cubital cross-veins, radial sector strongly geniculate at base, first anal vein scarcely sinuate beyond anal cell.

Length to tip of wing 9 mm.

Differs from *N. jacobsoni* by unbanded legs, and different male genitalia.

NEMOURA REMOTA, sp. nov.

TYPE.— M. C. Z. 10,826. Straits Settlements: Island of Penang (C. F. Baker).

Dark brown, shining, legs pale yellowish brown, wings brown, some of the cells paler in the middle, vertex with a faint pale spot in the middle behind the ocelli. Ocelli are far apart, being fully twice as near to eyes as to each other, the ocellar triangle very low; the pronotum is a trifle longer than broad, much narrower than the head, and slightly broader in front than behind, the anterior margin rounded. The radial sector is almost geniculate at base, and arises only a little beyond the median vein; the costal cross-vein is nearly its own length beyond end of subcosta; anal cell twice as long as broad, the first anal vein just beyond the cell bends down sharply.

Length to tip of wings 7 mm.

NEMOURA STYLATA, sp. nov.

TYPE.— M. C. Z. 10,821. Va.: Glencarlyn, 18 May, Chain Bridge, 25 May.

Pale brown, legs more yellow, wings evenly faintly infumate. Lateral ocelli about twice as far apart as from the eyes, anterior ocellus far forward so that the ocellar triangle is nearly equilateral. Pronotum about one and two thirds as broad as long, plainly broader in front than behind, the anterior corners rounded, and the anterior margin convex. Wings with radial sector almost geniculate at base; costal cross-vein about its length beyond end of subcosta; anal cell twice as long as broad, first anal vein but little sinuate at base; median area not swollen above. The male inferior appendages are longer than in our other species.

Length 6.5 mm.

PARANOTOPERLA THOREYI, sp. nov.

TYPE.— M. C. Z. 10,839. Fijis (Thorey).

Pale brownish, minutely pubescent, very evident on the legs. Ocelli in a slightly longer than equilateral triangle, posterior ocelli nearly twice as far apart as from the eyes; lateral bosses transverse, outer edge near the eye, inner end is the length of boss from posterior ocellus; antennae as long as wings. Pronotum quadrangular, the corners rounded, plainly a little broader than long, a transverse impression across the front part, surface only slightly rugose. Legs long and slender, hind tibia longer than femur, basal tarsal joint hardly as long as the apical, second very short. Wings long and slender (Plate **6**, fig. 85) only five median and cubital cross-veins, six cross-veins in disc of wing, all far apart; hind wing with a few cross-veins in disc, no median cross-veins; setae as long as body, many-jointed.

Length of wings 7.5 mm.; of hind femur 2 mm.

Smaller than *P. australica*, fewer cubital cross-veins, and pronotum plainly broader than long.

LEUCTRA MALAYANA, sp. nov.

TYPE.— M. C. Z. 10,828. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Blackish, abdomen rather paler, legs pale, darker at tips of joints, antennae pale on basal fifth, beyond brown, wings nearly uniform brown. Head minutely pubescent; hind ocelli fully three times as far apart as from the eyes, ocellar triangle low; the lateral bosses larger than ocelli, and close to the lower edge of the eyes; antennae clothed with appressed hair and a whirl of erect bristles near tip of each joint; each joint slightly fusiform. Pronotum a little longer than broad, sides parallel, corners rounded; legs minutely pubescent; wings slender, subcosta ends but little beyond the middle of wing, about six median cross-veins, and about ten cubital cross-veins, the last much beyond end of subcosta; last segment of female from below shows a small rounded plate base (Plate **4**, fig. 45).

Length to tip of wing 6 mm.

SIALIDAE.

PROTOSIALIS MINORA, sp. nov.

TYPE.— M. C. Z. 10,841. Straits Settlements: Singapore (C. F. Baker).

Head, thorax, basal two joints of antennae, femora, and extreme base of wings, yellowish. The pro- and mesothorax rather dull, abdomen, rest of antennae black; wings and tibia brown, tarsi rather pale. Structure similar to other species of the genus, but in the fore wings both upper and lower branches of the median vein run out to the margin unforked; of the three connecting veinlets between radius and radial sector the second is more than twice as near the third than to the first; 8 costal cross-veins.

Length 8 mm.

PROTOSIALIS BIMACULATA, sp. nov.

TYPE.— M. C. Z. 10,842. Bolivia: Rio Longo (H. Fassl).

Black, with yellowish head and prothorax. In general closely similar to *P. mexicana*, but the head has a distinct black spot above each antenna, and behind the eye is a black trifid mark back of the upper part of eye, instead of the much larger bifid mark back of entire eye in *P. mexicana*. The wings are infumate much as in *P. americana*, not as black as *P. mexicana*, the venation about as in *P. mexicana*, the basal cross-vein between the cubitus and first anal ends on cross-vein much beyond origin of radial sector, the first cross-vein between radius and radial sector is transverse instead of oblique as in *P. mexicana*.

Length to tip of wing 15 mm.

SIALIS AEQUALIS, sp. nov.

TYPE.— M. C. Z. 10,843. Va.: Falls Church, 19 April to 25 June (N. Banks). Mich.: Agricultural College (R. H. Pettit). Maine: Norway (S. I. Smith). Mass.: Milford, 8 June. N. J.: Lafayette, 26 May.

Deep black, some specimens showing the wings paler beyond the basal third. Structure in general similar to *S. infumata* and *S. concava* but the ventral plate of male is nearly as long as broad, with subparallel sides, and a broadly rounded tip, usually covering all the other parts from below; the last dorsal segment of male is broadly excavate below, not so deeply nor so narrowly as in the other species. The hair of head and thorax is very short as in the other eastern species; the middle veinlet connecting radius and radial sector oblique as in other eastern species.

Expanse 16–19 mm.

SIALIS CALIFORNICA, sp. nov.

Type.— M. C. Z. 10,844. Calif.: San Emigdio Canon, Kern Co., 3 June (F. Grinnell); Summit, Sierra Nevada (Osten Sacken); San Geronimo, 20 April (Osten Sacken); Saucelito, 15 May (H. Edwards).

Deep black; with rather long dense hair on head and thorax, and with the second connecting veinlet between radius and radial sector straight as in the

European species. Last dorsal segment of male seen from above is rather long, slightly narrowed and nearly truncate at tip, being only a little indented in middle, from behind it is shallowly, broadly emarginate and shows below a recurved spear-shaped plate with a depressed middle area and appressed to the ventral plate.

Expanse 18–26 mm.

This has been considered the European *S. fuliginosa*, but the male genitalia are of very different structure.

SIALIS ROTUNDA, sp. nov.

TYPE.— M. C. Z. 10,845. British Columbia: Bon Accord, 20 May (J. Russell).

Deep black throughout. The second of the connecting veinlets between radius and radial sector is straight across, one vein between subcosta and radius, about fourteen costal cross-veins. The last dorsal segment of the male shows a large horseshoe-shaped depression; the ventral plate is large, extending almost to tip of last segment, nearly truncate across tip; the lower appendages of last segment are elongate, parallel-sided and from below the tip of last dorsal segment appear as short, triangular pieces, separated by their width.

Expanse ♂ 23 mm.; ♀ 33 mm.

RAPHIDIDAE.

RAPHIDIA BIFURCA, sp. nov.

TYPE.— M. C. Z. 10,846. British Columbia: Wellington (G. Taylor).

Black; face in front of antennae yellow; antennae yellow on basal part, beyond brown; vertex with the usual red marks, the median one constricted near middle, the lateral ones very irregular; pronotum more or less pale lineate behind; legs yellow-brown, femora darker; tip of superior plate of male yellow. Wings hyaline, venation pale brown, yellow near base, stigma long, pale yellow, four cells behind it. In general very similar to *R. adnixa* but differs in genitalia, the superior plate (seen from above) being furcate, and (seen from the side) it is tapering; the two lower processes are dark, rather stout, and with a tooth or enlargement near inner base. In the female the last ventral segment has a large, apical yellow spot, and a median ridge; the ovipositor reaches to tip of wings.

Expanse 27 mm.

MYRMELEONIDAE.

CYMOTHALES HERMOSA, sp. nov.

TYPE.— M. C. Z. 10,565. N. Angola: Dalla Tando, 29 November (Le Moult); two specimens.

Wings marked in general as in *C. speciosa* and *eccentros;* only very small stigmal spot as in *eccentros;* apical band broken up more by spots than in *eccentros.* The upper part of the middle band is broader in front than behind (in *eccentros* broader behind). Head pale, black between and above antennae, antennae pale, dark on extreme base, vertex with a hump each side which has a slightly bilobed summit. Pronotum black, a pale line each side, and behind are two oblique lines on each side; thorax blackish, with a pale line each side; pleura dark. Abdomen pale with two black stripes above; legs pale, femur of front legs black except at base and tip, with dense black hair, and longer erect black bristles, hind femora also with black bristles. Front tarsus has basal joint longer than the fifth, the spurs a trifle longer than first and second joints together. In fore wing four to six cross-veins before any are crossed, but the radial sector arises farther out at the middle band; nine or more branches to radial sector; in hind wing one cross-vein before radial sector.

Length fore wing 30 to 34 mm., hind wing, 35 to 38 mm.

This belongs to the section or subgenus Mironius.

CHAETOLEON, gen. nov.

Differs from Brachynemurus, Austroleon, and allied genera in having erect enlarged bristles upon the mesonotum in front, also in that on the fore wing the second and third anal veins are united for a short distance, the second anal, however, does not approximate the first anal vein in its basal part (as in the Formicaleonini). The antennae are long and slender, with much enlarged tip. Legs slender, with very long bristles, the tarsus shorter than the tibia, the first tarsal joint a little longer than the second, spurs equal, two tarsal joints. Wings moderately slender, in fore wings three cross-veins before radial sector, in hind wings two such cross-veins; radial sector in fore wings arises much before the fork of the cubitus.

TYPE.— *Myrmeleon pumilis* Burmeister.

Brachynemurus pusillus Currie also belongs here.

PUREN.

I include in this genus *Myrmeleon inscriptus* Hagen. It differs from Psammoleon in having the basal joint of the tarsus much longer than the second joint, and the spurs elongated and curved only near tip. In *P. inscriptus*, as in the genotype, the costal area of the fore wing is biareolate; in *P. connexus* this area has but one series of cells. Both differ from the type of Puren in having more (6 or 7) cross-veins before the radial sector in the fore wing.

PUREN CONNEXUS, sp. nov.

TYPE.— M. C. Z. 10,848. Calif.: San Jacinto Mts., 25 June (F. Grinnell).

Head pale, a black interantennal mark, two transverse rows of black spots across vertex; pronotum black, a narrow median pale line, and on each side a spot in front and a line behind; mesonotum with pale spot and stripe each side. Abdomen black. Legs mostly black, hind tibia pale on outer basal half; femora and tibia with black bristles, some black and many white hairs; basal joint of tarsus twice as long as the second, spurs equal almost two joints, but little curved except near tip, the claws hardly one half as long as the spurs. Wings hyaline; veins pale, marked with black, mostly in long streaks. As in *P. inscriptus* there is in the fore wing a prominent flexuous dark line, formed by connecting the oblique mark at end of anal with that up from end of cubitus, this line is not as deeply incurved as in *P. inscriptus*. In both fore wings there is a strong vein from forking of cubitus obliquely upward and backward to the median, possibly this is abnormal. The wings are narrower than in *P. inscriptus*, and the costal area has but a single series of cells.

Expanse 54 mm.

EREMOLEON NIGRIBASIS, sp. nov.

TYPE.— M. C. Z. 10,847. Utah: St. George, 5, 6 June (T. Spalding).

Pale, rather reddish, an indistinct dark band below antennae, and faint dark marks on vertex, pronotum with remnants of two submedian dark lines, and a sinuous line each side, rest of thorax with few sinuous dark lines and dots, pleura with two dark stripes, the upper one just below the wings; abdomen pale, second segment with dark at base and near tip, others with dark just before tip; legs pale, tibiae and femora somewhat dotted with dark. Wings hyaline, venation rather rufous, the cross-veins mostly black, and other veins at junction with cross-veins; stigma and faint spot at end of cubitus dark; a prominent black spot at base of fore wing; hind wings with veins only slightly marked with dark. Structurally similar to *E. macer*, but antennae shorter, legs less slender, spurs equal three tarsal joints; wings hardly as elongate as in that species, six or seven cross-veins before radial sector in fore wings, eight branches of the radial sector; the radial sector arises much beyond the cubital fork.

Expanse 53 to 58 mm.

DIMARES HAGENI, sp. nov.

TYPE.— M. C. Z. 10,555. Brazil: Chapada (H. H. Smith).

Marked on the same plan as *D. elegans*, but the markings much darker, less broken up, broader and tending to form bands, the four costal marks before stigma extend more than one half way across the wing, while the numerous small spots in the hind part of the wing are so arranged as to almost form bands with the costal marks; the apical mark consists of a dark preapical band and an apical spot. In the hind wings the marks also almost form bands; the spot over the forking of the cubitus extends obliquely upward in an unbroken band; the apical mark consists of three spots, but little separated; markings of the body as in *D. elegans*, but rather broader. Size, a little larger than *D. elegans*.

This is perhaps what Navas refers to as the true *elegans*, but his variety *lepida* is the true *elegans* as Perty's figure plainly shows the form with reduced spots.

GYMNOCNEMIA BOLIVIANA, sp. nov.

TYPE.— M. C. Z. 10,650. Bolivia: Rio Longo (H. Fassl).

Head pale, a large black mark above antennae and extending down between them, two dark spots on vertex behind; palpi and antennae pale, the latter dark toward tips; pronotum pale, lateral margin dark, and a narrower dark stripe each side near the marginal one, leaving a broad median space pale; rest of thorax pale, with various large dark spots, the scutelli largely pale; the abdomen mostly pale, apical half of segments above dark; legs pale, thickly dotted with dark, the femora and tibia dark at the tips. Wings hyaline; veins alternately black and pale, the cross-veins largely black, in apical and posterior part of fore wings are faint clouds over some of the cross-veins; stigma pale, a dark mark at its base. Wings moderately slender, almost acute at tips; seven cross-veins in fore wings before radial sector, eight branches of the radial sector, several costals before the stigma are forked. Antennae long; pronotum longer than broad; legs slender, very much as in *G. variegata*.

Length of fore wings 30 mm.

Differs from *G. leptocera* in marks of the pronotum.

PSAMMOLEON PARVULUS, sp. nov.

TYPE.— M. C. Z. 10,648. Brazil: Chapada (H. H. Smith).

Face pale, dark mark from eye to eye over antennal bases, a gray band above antennae, vertex dark, without definite marks; palpi pale, last joint dark; antennae dark, narrowly annulate with pale; pronotum dark, with a short pale stripe each side, not reaching either end; rest of thorax dark, some sutures pale; abdomen dark; legs pale, front femora mostly dark, a pale stripe on upper front side, middle and hind femora dark at tip and near base, tibia dark at tips, middle and front tibiae also dark near middle and toward base, and with some small spots, tarsal joints dark at tips. Wings hyaline, veins alternately dark and pale, but more dark than pale, fore wings with oblique dark line up from end of anal vein, and another at end of cubitus as usual, stigma hardly distinct; wings slender, acute; seven cross-veins before radial sector in fore wings, nine branches of radial sector. Legs not much thickened, with very long black bristles and short white hairs; spurs as long as two to more than three joints.

Length of fore wings 21 mm.

MYRMELEON INCOMPLETUS, sp. nov.

TYPE.— M. C. Z. 10,651. Ecuador: Posorja (F. Campos).

Face shining black, only lower part of clypeus, and the sides near eyes pale; vertex dark, four submedian spots and one each side darker, a pale spot each side also; palpi with last joint black; antennae dark, tips darker; pronotum dark, indistinctly marked with pale, the anterior sides, a median stripe in front, and a submedian stripe each side pale; rest of thorax dark, sides with pale sutures; abdomen dark, tips of some segments pale above; legs pale, femora shining, with black streak above and below, tibia black beneath and lined each side, tarsi mostly black. Wings hyaline; veins pale, with dark streaks, cross-veins more dotted with dark; stigma pale, scarcely distinct; in fore wings seven cross-veins before radial sector, four in hind wings, ten branches to radial sector; wings moderately slender, acute at tips. Pronotum much broader than long, tarsus of front legs scarcely longer than the tibia, spurs a little shorter than first tarsal joint.

Length of fore wing 29 mm.

MYRMELEON PALLIDIPES, sp. nov.

TYPE.— M. C. Z. 10,649. Brazil: Chapada (H. H. Smith).

Head mostly reddish to red-brown, clypeus and lower face pale, above the antennae rather more black, vertex without definite marks, palpi pale; antennae brown; pronotum reddish brown, rather paler in front, rest of thorax also reddish brown; abdomen brown to black; legs a faint reddish yellow, almost wholly unmarked, the tibia rather darker on outer base; wings hyaline, veins yellowish, a few, mostly cross-veins, show minute dark dots at base of hairs, stigma pale. Pronotum broader than long; legs with few bristles, and very fine hairs, spurs not as long as first tarsal joint, tarsus of front leg very long, the first four joints together nearly as long as the tibia. Wings moderately slender, acute at tips, seven cross-veins before radial sector in fore wings, four in hind wings, ten branches of the radial sector.

Length of fore wings 31 mm.

HEMEROBIIDAE.

HEMEROBIUS TAGALICUS, sp. nov.

TYPE. — M. C. Z. 10,849. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Pale yellowish, a black mark under each eye, and a curved dark mark each side under antennae extending inward from each eye; palpi black, the extreme tip pale; antennae pale yellowish throughout; pronotum with a broad dark stripe each side, rest of thorax and the abdomen yellowish brown; legs pale, unmarked. Wings hyaline, the gradates black, anal region mostly black, the extreme edge pale, veins interruptedly brown and pale in streaks. Wings rather broad; seven outer gradates, five inner, the upper one of inner series far from the others, the middle ones of this series and the lower ones of outer series not far apart, and an extra cross-vein in fork of median vein considerably before the inner series; lower branch of median vein bent toward the cubitus; three radial sectors, the third with four branches; in hind wings the stigma is reddish, darker at base, venation pale, about nine cross-veins well separated; superior male appendages long, very slender toward tip.

Expanse 14 mm.

HEMEROBIUS RIZALI, sp. nov.

TYPE.— M. C. Z. 10,850. Philippines — Luzon: Benguet; Baguio (C. F. Baker).

Head pale yellowish; a broad dark mark under each eye; palpi dark, tip pale; antennae and legs pale, unmarked; pronotum with a dark stripe on each side, rest of thorax and the abdomen yellowish brown, with yellowish hair. Wings hyaline, faintly infuscate over the gradate series; veins pale, with dark streaks, gradates dark, a dark spot at connection of median and cubitus; hind wings hyaline, veins pale, except the gradates dark. Fore wings rather long, but with a moderately broad costal area; three radial sectors, third with three branches; seven outer and six inner gradate veinlets in nearly parallel series; lower branch of medius bent toward cubitus. In the hind wings two cross-veins, well separated. Superior appendages of the male, seen from the side broadly furcate below; the outer part longer, more slender and its tip curved across to the opposite appendage.

Expanse 15 mm.

Boriomyia brunnea, sp. nov.

Type.— M. C. Z. 10,856. Montana: Midvale (C. E. Brown).

Face shining black, vertex and basal joints of the antennae dark brown, rest of antennae pale brownish; pronotum brown, rest of thorax and the legs pale; abdomen brown. Wings a uniform reddish brown, unmarked, veins concolorous, not dotted. Wings slender, fully two and one half times as long as broad, four radial sectors, the cross-vein between first sector and the median is much beyond the forking of median, that from median to the cubitus is at the forking of the median vein; about seven inner gradate veinlets, in an even series; only three or four outer gradates, widely separated, the last much nearer to the inner series than the others.

Expanse 15 mm.

Boriomyia longipennis, sp. nov.

Type.— M. C. Z. 10,857. Calif.: Berkeley (E. A. Essig).

Pale yellowish, a red mark on each cheek under the eye, and a red spot each side on the clypeus, with traces of reddish below bases of the antennae; a short, median reddish line on the pronotum, rest of thorax, abdomen, and legs unmarked; two black dots close together at base of each fore wing. Wings hyaline, fore wing faintly mottled with pale brown on the outer half, most noticeably over the gradate series, veins pale, but with some distinct black dots, each about the distance of which separates veins from the next. Wings long and slender, over two and one half times as long as broad, three or four radial sectors, first connected to median by a cross-vein near the forking of the median, latter connected to cubitus much before forking of median, two parallel strongly oblique gradate series, outer rather nearer to the inner than to the margin, about seven veinlets in each series.

Expanse 20 mm.

Notiobiella minima, sp. nov.

Type.— M. C. Z. 10,852. Borneo: Sandakan (C. F. Baker).

Head pale, dark on lower part, black spot under each eye; palpi black; antennae pale; pronotum mostly dark; thorax and abdomen brown, latter paler beneath; legs pale. Wings brownish, veins yellowish brown, faintly interrupted with dark dots, gradates black, a deep black spot near base of wings over subcostal cross-vein and those behind it. Wings not as slender as in *N. affinis* and *N. iniquus*, venation about the same, the second radial sector does not fork till behind the stigma, where the radius also forks.

Length of fore wing 3.5 mm.

Differs from allies in smaller size, darker wings, in forking of second radial sector and proportionally broader wings.

NOTIOBIELLA VALIDA sp. nov.

TYPE.— M. C. Z. 10,851. Borneo: Sandakan (C. F. Baker).

Head pale, dark across below the antennae, and dark beneath eyes, a spot each side on vertex, connected behind; palpi brown; antennae pale; pronotum dull blackish, the posterior sides pale; thorax blackish, scutellum pale; abdomen pale, tips of segment dark (♀), in the male the abdomen pale, dark on last two segments; legs pale, tibia with dark spot near tip. Wings slightly fumose, venation reddish, gradates black and also the forkings of most of the veins, dark spot at base of stigma, and extreme base of costal margin black, no large black spot near base. Wings broad, rounded at tip, the second radial sector forked three times before the stigma where it is connected back to radius by a cross-vein; in the male there is a large, impressed, circular, scabrous, dark mark situated on the first radial sector a little before it forks; the male appendages are very large.

Length of fore wing 4.5 mm.

This species may, perhaps, form a new subgenus.

MICROMUS PICTIPES, sp. nov.

TYPE.— M. C. Z. 10,853. Philippines — Luzon: Benguet; Baguio (C. F. Baker).

Head pale, with dark spot each side on face and below the eyes, vertex with a black dot each side; pronotum dark with two pale tubercles near middle, rest of thorax and the abdomen dark; legs pale, much spotted, the femora with dark band before the middle, the tibia with dark band before the middle and another near tip, the tarsi banded. Wings hyaline, venation dark and pale in the usual streaks, but more dark than pale, the spots along the outer costal margin very distinct, the gradate veins heavily bordered with blackish, a large spot at end of the anal vein, and a mark at bend of the cubitus. Nine or ten outer, and six inner gradate veins; both in a fairly even series. Wings rather long and slender, but rounded at tip.

Expanse 20 mm.

Related to *M. morosus*, but distinct by the banded legs.

MICROMUS IGOROTUS, sp. nov.

TYPE.— M. C. Z. 10,854. Philippines — Luzon: Los Banos, Mt. Makiling. Benguet; Baguio (C. F. Baker).

In general similar to *M. pusillus* Gerst., but a trifle larger, and with broader wings. Color and markings similar to that species, the wings marked in the same way, but the dark marks stand out more distinctly. The radial sector with four or five branches. The gradate veins are not in an even series as in *M. pusillus*, but very irregular, the outer series with one or more near each end out of line, and sometimes an extra one. In the hind wings besides the dark gradate veins the radial sector is black by the forkings.

Expanse 15 mm.

ZACHOBIELLA gen. nov.

A hemerobiid; no recurrent vein, two radial sectors; medius and cubitus not approximated, but as wide apart as are other veins, two short series of gradates. In hind wings one radial sector, several branched, and two cross-veins. Head much as in Micromus, but the vertex more sloping; hind tibiae fusiform. In appearance like a narrow-winged Micromus, with reduced venation, but the separated median and cubitus quite different. The forked cubitus separates it from Neurorthus, to which it is not very closely allied.

TYPE.— *Z. punctata*, sp. nov.

ZACHOBIELLA PUNCTATA, sp. nov.

TYPE.— M. C. Z. 10,855. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Pale; black mark below each eye; palpi black; antennae pale; vertex polished, punctate, bristly; pronotum dark, with a pale median stripe, which extends back over the rest of the thorax, abdomen yellow-brown; legs almost white, unmarked, hind tibia strongly fusiform. Wings hyaline; veins pale; cross-veins heavily black, the forkings of veins, except the basal ones, have triangular dark spots, wings long and rather slender, both radial sectors soon fork, and their branches fork only near margin; anal veins with several short branches near the tips; the hind wings have the radial sector soon forked, the upper branch with two other branches; a cross-vein between branches of the radial sector, and another between the lower branch and the median vein.

Expanse 10 mm.

CHRYSOPIDAE.

Nothochrysa simplex, sp. nov.

Type.— M. C. Z. 10,858. Borneo: Sandakan (C. F. Baker).

Pale yellowish, unmarked; antennae beyond basal part slightly darker. Prothorax scarcely longer than broad, sides nearly parallel. Wings hyaline, veins pale yellowish, stigma scarcely marked; wings moderately long, acute at tips, costal area but little swollen; third cubital cell very oblique at tip, divisory veinlet terminates above middle of end; nine outer, seven inner gradates in nearly parallel rows, outer row fully as near inner as to outer margin, the last one or two inner series much before the others; in hind wings seven outer, six inner gradates, last one or two much before others.

Length of fore wings 11 mm.

Nothochrysa pallicornis, sp. nov.

Type.— M. C. Z. 10,859. Straits Settlements: Singapore (C. F. Baker).

Pale yellowish; pronotum has a rounded black spot each side near hind end, abdomen dark near tip; legs pale, unmarked. Wings hyaline, with pale yellowish venation, except outer gradates are black in fore wings, and in widest part of the radial area three cross-veins are dark in the middle of their length; in hind wings the radial sector is dark for a short distance before the stigma, other veins pale. Prothorax much longer than broad, narrowed in front; wings about as in *N. aequalis*, tips rounded, costal area fairly broad, gradates approaching each other behind; nine outer and seven inner ones; in hind wings eight outer and seven inner gradates.

Length of fore wing 14½ mm.

Chrysopa necrota, sp. nov.

Type.— M. C. Z. 10,860. Straits Settlements: Singapore (C. F. Baker).

Head yellowish, rather darker below; palpi dark; antennae pale, unmarked, prothorax pale, with narrow lateral margin and a median line black; mesonotum black across front margin of the lobes, metanotum dark each side at base of wings; legs with the tibiae partly dark, hind tibia dark on more than basal half. Wings hyaline, veins mostly pale, the cross-veins mostly dark, also the gradates, the base of subcosta and radius black, the latter, however, pale for a short distance near base; origin of the radial sector, first and second cubital cross-veins, and several veins behind are margined with blackish, stigma dark at base. Pronotum short and broad, narrowed in front. Wings rather broad, rounded at tips, divisory veinlet cuts off large part of third cubital cell; nine outer and seven inner gradates in nearly parallel series.

Length of fore wings 14 mm.

Chrysopa atrioris, sp. nov.

Type.— M. C. Z. 10,861. Straits Settlements: Singapore (C. F. Baker).

Head below antennae mostly shining black, but with a transverse pale line across base of clypeus; palpi black; first and second joints of the antennae reddish brown, rest pale, vertex pale; pronotum pale, the sides dark, almost black in front; legs pale, unmarked. Wings hyaline, veins pale, but some cross-veins margined, very faintly brown, and several cross-veins near base of wing partly dark. Prothorax as broad as long, slightly narrowed in front. Wings slender, almost acute, costal area narrow; third cubital cell very long, divisory vein ends much before its middle, about at the cross-vein; gradates few, scattered, and irregular, about four in outer, three in inner series; hind wings very slender, acute, veins pale, four outer and two inner gradates.

Length fore wing 9 mm.

Chrysopa nigribasis, sp. nov.

Type.— M. C. Z. 10,862. Straits Settlements: Island of Penang (C. F. Baker).

Pale, cheeks dark and three dark spots in a transverse row across face below the antennae; mesonotum with dark band across connecting bases of fore wings. Wings hyaline, veins mostly pale greenish, the costa of fore wings for a short distance is black, and many of the costal cross-veins are black at extreme tip. The pronotum is as broad as long, narrowed in front. The wings are moderately broad, acute at tips, the costal area near base much broader than in most species of the genus; six outer and five inner gradates, in fairly even series, rather far apart, but parallel; third cubital cell with strongly oblique tip, divisory veinlet ending near the end of the cell.

Length of fore wing 11 mm.

Chrysopa caliptera, sp. nov.

Type.— M. C. Z. 10,863. Borneo: Sandakan (C. F. Baker).

Pale yellowish green, a black spot on each cheek, and a vertical black line between antennae, pronotum with a dark spot on middle of each side, anterior lobe of mesothorax with two small dark spots, larger spot at base of fore wings, and one on pleura below base of fore wings; legs pale, unmarked. Wings hyaline, veins pale greenish, gradates and many cross-veins black, and dark margined, or dark at one end; the costals pale, a dark spot at base of stigma, one over base of first and second branches of radial sector that run to margin, and another at end of anal vein; origin of radial sector and several anal veins dark; hind wings unmarked, veins pale. Wings slender, acute at tips, costal area rather narrow, gradates irregular and close together, five or six in each series, divisory veinlet ends a little beyond the cross-vein. Prothorax as broad as long, scarcely narrowed in front.

Length of fore wing 13 mm.

Chrysopa everes, sp. nov.

Type.— M. C. Z. 10,864. French Guiana.

Yellowish green, unmarked; antennae black, but basal joint pale; palpi pale. Wings hyaline; veins green, radial cross-veins blackish in middle, and the gradates dark; stigma greenish. Basal joint of antennae moderately swollen within, nearly as much as in *C. fiebrigi;* pronotum about twice as broad as long, not narrowed in front, front margin convex. Wings moderately slender, tips almost acute, costal area of medium width, inner gradates of two to four veinlets, seven or eight in outer series, rows nearly parallel and not far apart; divisory veinlet ends beyond the cross-vein, about one half way out to the tip of the cell.

Length of fore wings 13.5 mm.

Differs from *C. caucana* and *C. claveri* in lacking red to sides of pronotum, and less black on the cross-veins; it is also a rather broader bodied insect.

Chrysopa bicarnea, sp. nov.

Type.— M. C. Z. 10,866. Florida: Miami (G. F. Moznette).

Differs from all our other species in having two red lines on the basal joint of each antennae, one above and one on outer side, the one on upper side extending back on vertex obliquely outward, and sometimes there is a red spot on the face under each antenna; otherwise the insect is green with a pale yellowish face, and pale legs. The venation is green, the costal and radial cross-veins marked with black in the middle, the gradate veinlets black, and a few cross-veins in basal part of wing dark. The divisory cell is long and slender, ending beyond the cross-vein above. There are about five inner and nine outer gradates in fore wing, the two series very close to each other, parallel, the outer row almost twice as near to the inner as to the outer margin; the fore wings are moderately broad, acute at tips; the hind wings slender, acute, the venation mostly pale, the gradates more separated than in fore wings, the inner row of four, the outer of seven. The pronotum is rather short, narrowed in front.

Expanse 30 mm.

ALLOCHRYSA MAGNIFICA, sp. nov.

TYPE.— M. C. Z. 10,865. Brazil: Chapada (H. H. Smith). French Guiana: Godeberd-Maroni (Le Moult).

Dull yellowish, marked with red-brown; vertex above antennae largely reddish, but the elevated triangular part is pale; basal joint of antennae with a transverse black mark across upper tip, and a black spot on inner side near tip, beyond many of the joints are black beneath for one half way to tip of antennae. Pronotum dark each side, meso- and metanotum also dark on sides; abdomen dark above, paler beneath; legs pale. Wings hyaline, stigma prominently dark; in proper light a dark shade from outer gradates to margin of wings, veins pale, outer gradates and marginal forks dark, some of costal and radial cross-veins dark at ends; eight to nine outer, and ten to eleven inner gradates, parallel, but inner series extends basally; in hind wing nine inner, and seven outer gradates.

Length of fore wings 23 mm.

Related to *A. longicornis*, but distinct by marks of basal joint of antennæ.

MANTISPIDAE.

MANTISPA VERTICALIS, sp. nov.

TYPE.—M. C. Z. 10,778. Australia — N. T.: Port Darwin, 30 November (L. Dodd).

Head yellow; a broad median black stripe on the face, large dark spot above the antennae, inclosing a median pale spot, and a broad dark band on vertex from eye to eye; antennae pale on base, dark beyond; pronotum with a median projection to the anterior lobe, two tubercles behind, slender part more than twice as long as the anterior lobe, transversely wrinkled, but not bristly, anterior lobe dark on each side, posterior part dark just before mesothorax; meso- and metanotum reddish brown, scutelli yellow, pleura red-brown; abdomen red-brown above, paler beneath; legs pale, anterior coxae reddish brown toward tip; femora pale reddish brown on outer side, blackish on inner side and above, tibia reddish. Wings hyaline, the usual stripe reddish, stigma moderately long, but hardly as slender as in *M. vittata;* the venation dark, except a little near base; first basal cell hardly longer than the third, with one branch, second cell with two branches, third with one; basal joint of tarsus nearly equal to others together, claws simple.

Length to tip of wings 11 mm.

MANTISPA NEWMANI, sp. nov.

TYPE.— M. C. Z. 10,774. Borneo: Sandakan (C. F. Baker).

Related to *M. cora* Newman. Head yellow, with a median black stripe over face, above antennae a broad transverse brown spot containing two small pale spots; antennae black, basal joints pale beneath; pronotum marked as in *M. cora,* but the median stripe is much darker, the lateral stripes narrow, connected at each end to median. Thorax above dark, with two pale spots in front, one each side inward from base of fore wings, and the scutelli pale; pleura wholly pale; legs pale, middle and hind pair unmarked except the middle tibiae have a dark stripe on underside, front legs with femora black on more than apical half of inner side, outer side with two dark clouds one near middle and one at tip; tibia black, except the extreme base. Wings hyaline, the usual stripe black; veins black, all basal veins pale, except subcosta and radius, and radius is pale just behind the stigma; abdomen pale beneath, segments dark at tips, above dark, mottled with pale; first radial cell with one branch, others with two each.

Length to tip of wings, 10–12 mm.

MANTISPA COMPLETA, sp. nov.

TYPE.— M. C. Z. 10,776. Philippines — Luzon: Mt. Makiling (C. F. Baker).

Head pale, marked with a large brown spot as in *M. luzonensis;* antennae black, except pale basal joints; pronotum almost wholly dark brown, no spots on anterior lobe and scarcely a trace on the sides; meso- and metanotum dark, the scutelli yellow; pleura dark, with few pale spots; abdomen mostly dark, bases of segments above and below pale, and pale spots on each side of each segment; legs pale, tips of hind tibiae dark, front femora almost wholly dark on both sides, only the extreme base pale, tibia dark, but with a pale streak below. Wings hyaline, usual streak black, venation black, except base of cubital and the axillary vein yellow. Venation as in Mantispilla, first radial cell with one branch, second with one, and third with two branches.

Length 7 mm.

Similar to very small *M. luzonensis;* differs in wholly dark pronotum, in dark outer side to front femora, and the legs less marked.

MANTISPA DECEPTA, sp. nov.

TYPE.— M. C. Z. 10,775. Philippines — Mindanao: Surigao; Butuan (C. F. Baker).

Marks of head similar to *M. annulicornis*, the face mark rather broader; antennae black, except basal joints pale beneath; pronotum dark in front, pale behind, but outline of the dorsal mark fairly distinct, the dark of the anterior lobe is faintly divided in the middle, and with a pale spot on each side; meso- and metanotum black on sides, pale through the middle; abdomen pale, with dark marks near tips of the segments, last ventral of male with a median mark only (*M. annulicornis* male has a basal median dark spot and two smaller apical ones); legs pale, anterior coxae lined with brown, femora dark brown on apical two thirds of both sides, tibia mostly brown. Wings hyaline, usual dark streak faintly indicated, stigma yellowish; venation black, but basal venation and subcosta and radius mostly pale. First radial cell with one branch, second and third with two each; pronotum scarcely wrinkled, minutely hairy above.

Expanse 17 to 19 mm.

EUCLIMACIA GERSTAECKERI, sp. nov.

TYPE.— M. C. Z. 10,777. Straits Settlements: Singapore (C. F. Baker).

Similar to *E. morosa* of Gerstaecker, but lacks the markings on the body, and the position of the pale in the wing is different. Body black, the last few segments of the abdomen are red, antennae slightly rufous beneath. Thorax as short as in allied forms, the middle part with conical protuberances above. Wings slender, veined as in related forms, first radial cell with five branches, others with four each, costal area of fore wings with twelve cross-veins. Both wings with anterior half or third colored, mostly dark brown, rest of wings hyaline, extreme tip of wings yellowish, in the fore wings the colored part beyond middle is pale yellow for a short distance, and near the base the dark gives off a branch between the median and cubital veins, not, however, reaching the hind margin.

Expanse 37 mm.

LIMNEPHILIDAE.

COLPOTAULIUS TARSALIS, sp. nov.

TYPE.— M. C. Z. 10,880. Col.: Ward (E. J. Oslar).

In color markings and general appearance close to *C. perpusillus.* It differs from that species in lacking a row of black spines on the front side of the front femora, and in that the first joint of the front tarsus in the male is much shorter than the second joint, in fact less than half as long, and most important in the shape of the male genital parts (Plate **7**, fig. 104), which seen from the side show no median projecting part which is characteristic of *C. perpusillus.* Of the same size as that species.

ZAPOROTA, gen. nov.

Related to Colpotaulius, but the spurs 0, 2, 2, and the pronotum short. The male palpi are very short, the second and third joints together scarcely as long as width of face from eye to eye; the front tibia faintly curved in the male, almost without spines except two close together at inner tip; front femora with short dense hair beneath; legs with few spines, last joint of hind tarsus with several distinct spines beneath; no ocellar macrochaetae; pronotum short; bristles of mesonotum in well-defined strips. Venation of type usual in family, fore wings with rounded tip, membrane not granulate; hind wings scarcely incised at end of cubitus.

In my table of the family (Can. ent., **48,** 1916, p. 118) it will run to Allegophylax except that it has not a granulate membrane; it differs in very short palpi, bare front tibia, and different shape of wings.

TYPE.— *Z. pallens,* gen. nov.

ZAPOROTA PALLENS, sp. nov.

TYPE.— M. C. Z. 10,878. Alaska: Demarkation Point, 30 June (W. S. Brooks).

Pale yellowish throughout, with yellowish hair; dorsum of abdomen dark, spines of legs black, and sometimes some of the veins in middle of wings are brownish. Fore wings with the first fork scarcely back of anastomosis, third fork acute on anastomosis, second apical cell very wide at base, discal cell much longer than the pedicel, radius barely curved at the stigma; in hind wings the discal cell reaches barely in front of the cubital fork. In front tarsus of the male the basal joint is as long as the second.

Expanse 14 to 16 mm.

LIMNEPHILUS ADUSTUS, sp. nov.

TYPE.— M. C. Z. 10,879. Alberta: Banff, 21 August (N. Sanson).

Black, with black and yellow hair; antennae (except basal joints) and legs (except the femora) brownish to yellowish, most of head and thorax above with yellow hair; legs with black spines. The ocellar macrochaetae farther back than the ocelli and also much closer together than are the ocelli, first joint front tarsus one and two thirds as long as second. Fore wings yellowish with much yellowish hair, and two large brown spots; one from the posterior anastomosis outward, the other over the outer two thirds of the third apical cell, extending on sides a little into the adjoining cells; stigma dark, and anal area slightly infuscated; radial sector but little bent at the stigma. The male genitalia in general similar to *L. kincaidi* but the superior appendages longer; the lower intermediate pair (which are golden) form a half circle, when seen from behind.

Expanse 22 mm.

LIMNEPHILUS CRASSUS, sp. nov.

TYPE.— M. C. Z. 10,871. Massachusetts.

Yellowish, with yellowish hair, some brown hair each side on face and on sides of pro- and mesothorax; legs with black spines. Fore wings with pale costal space, elsewhere mostly brown, heavily mottled with pale; a large, oblique spot over thyridial cell as usual, and one in the bases of apical cells; hind wings hyaline. Ocellar macrochaetae behind ocelli, and almost as far apart as are the ocelli; radius curved at stigma; in hind wings the fourth apical cell is more than one half as wide as the third at base. The male genitalia shows a large superior plate, with two flat, divergent processes, which are brown toward tips.

Expanse 27 mm.

LIMNEPHILUS MORRISONI, sp. nov.

TYPE.— M. C. Z. 10,873. Nev.: Reno (H. K. Morrison); Sierra Nevada (G. R. Crotch).

Pale yellowish, with mostly yellow hair and bristles; palpi of female only moderately long; ocellar macrochaetae almost between the ocelli. Fore wings pale brownish; the usual oblique pale mark over thyridial cell; a spot just before the anastomosis, extending backwards below; part of the fourth and most of fifth apical cells with pale spot extending into apical part of first subapical cell; one or two small pale spots above middle of the discal cell; practically no other pale marks, and all of these may be very faint. The female genitalia shows above two furcate processes, the outer branch hairy. Spines on legs black, many on tibia of front pairs. In the male the basal tarsal joint of the front legs is very much longer than the second.

Expanse ♂ 24; ♀ 28 mm.

LIMNEPHILUS KENNICOTTI, sp. nov.

TYPE.— M. C. Z. 10,872. Hudson's Bay Terr.: Great Slave Lake, 1861 (Robert Kennicott).

Blackish, vertex and notum slightly pruinose, abdomen brownish, bristles and hair mostly black; antennae and legs yellowish, spines black. Fore wings yellowish, most of the apical and posterior parts brown, mottled with pale; the usual oblique median mark, a large spot before, and one beyond the anastomosis, pale; hind wings pale, no beard. Maxillary palpi of male very slender; legs slender, on front pair the basal tarsal joint is much longer than the second, front tibia spined to base, hind tibia very long and slender, and not spined on basal half. Ocellar macrochaetae almost between the ocelli. Fore wings rather slender, first and fifth apical cells reach but little back of the anastomosis, radius bent slightly at stigma; in hind wings the fourth apical cell is about one half as wide at base as the third apical; discal cell slightly longer than apical cells.

Expanse 19 mm.

LIMNEPHILUS ELONGATUS, sp. nov.

TYPE.— M. C. Z. 10,870. Hudson's Bay Terr.: Ft. Resoluton, Great Slave Lake (Robert Kennicott).

Yellowish; vertex and thorax brown; abdomen more yellowish brown; legs and antennae pale; hair mostly yellowish; spines of legs black; male palpi very long; ocellar bristles back of the ocelli; tibia of front legs spined to base; legs slender, in male the basal joint of front pair is very much longer than the second joint. Fore wings hyaline, yellowish, with stigma and beyond, and most of posterior part brownish, mottled with pale; large pale spots before and beyond the anastomosis, and the usual oblique thyridial spot; hind wings pale, near tip yellowish, no beard, fourth apical cell at base one half as wide as the third; in the fore wing the first fork is farther back of the anastomosis than the third fork. In the male the genitalia have very long superior appendages, concave within and toothed near tip; in the female the parts are similar to those of *L. sitchensis* except that the intermediate central piece, which in *L. sitchensis* is small and slightly bifid at tip, is here a very large and deeply divided piece reaching to tip of the superior appendages.

Expanse 25 to 27 mm.

Anabolia curta, sp. nov.

Type.— M. C. Z. 10,874. Massachusetts (Hagen coll.).

Black; legs and antennae yellowish; head with black hair below, yellowish above; basal joint of antennae with golden hair; legs with black spines; between ocelli and eyes, and on middle of the mesothorax the surface is sericeous. Fore wings blackish, rather densely spotted with small patches of pale hairs, especially noticeable at the outer margin, and just before the posterior anastomosis; hind wings scarcely darkened. In general closely similar to *A. mutatus* Hagen, but the marking near upper anastomosis is scarcely distinct. The male has the upper appendages as in *A. mutatus*, but the lower pair are much shorter and not strongly mucronate (as in *A. mutatus*). It is a slightly smaller species.

Expanse 26 mm.

Anisogamus edwardsi, sp. nov.

Type.— M. C. Z. 10,881. Calif.: Marin Co. (Henry Edwards, James Behrens).

Black, with black bristles; some hairs on the vertex, pronotum, thorax, middle of face, and lower part of head are yellowish. Palpi pale, in the male not especially long. Antennae black, crenulate below; ocelli of moderate size, no ocellar bristles. Abdomen with a pale streak on the sides and parts of genitalia pale. Legs pale, femora mostly black, spines black, tibia I spined to the base, last joint hind tarsus not spined beneath, spurs 1, 3, 4. Wings pale yellowish, membrane rather densely clothed with black hair, giving a blackish appearance to the wing; many irregular small spots of pale hairs, not very distinct, the bristles on veins near the base of wings are long. Hind wings pale yellowish. Venation about as usual; radius not bent at the stigma, fork I only a short distance back on the cell, fork III almost as far back, discal cell much longer than its pedicel; posterior anastomosis oblique, continuous; hyaline spot on arculus and thyridium.

Expanse 28 mm.

Homophylax crotchi, sp. nov.

Type.— M. C. Z. 10,877. Vancouver Island: Victoria, July (G. R. Crotch).

Yellowish throughout, with yellowish hair; the fore wings with distinct dark marks as follows: — the posterior half as far out as the anastomosis, the dark extending upward nearly across the discal cell, beyond the anastomosis is an oblique brown band from arculus to tip of the first apical cell, on its inner middle with a projection toward the anastomosis; the thyridium with a hyaline white spot, and one on the arculus. Venation very similar to *H. flavipennis*, but the discal cell has a longer pedicel; the fore wings are broader and more oblique on the outer margin than in that species, and the membrane more plainly granulate. The appendages are very similar, but the lower pair, longer and more prominent.

Expanse 38 mm.

ECCLISOMYIA SIMULATA, sp. nov.

TYPE.— M. C. Z. 10,876. Nevada: Reno (H. K. Morrison).

Pale yellowish; head and thorax with black bristles, two ocellar macrochaetae just obliquely back of each ocellus; legs with black spines; spurs 1–3–4. Fore wings with pale, unmarked costal area, elsewhere pale brownish, densely mottled with rounded, whitish spots, often confluent; hind wings with apical part of veins dark. Venation about as in *E. conspersa*, first fork reaching back nearly opposite base of posterior anastomosis; radius scarcely bent at the stigma. Male genitalia closely similar to those of *E. conspersa*, the superior appendages are rather longer, and wholly pale, the median process appears to be the same, and the middle piece with furcate process also similar, as are likewise the lower lateral appendages, but instead of the intermediate black processes of *E. conspersa* there are two sets of four bristle-like pieces, the inner pair the longer.

Expanse 26 mm.

The spur formula is unusual, but the similarity in genitalia shows the ocellar macrochaetae to be a more valuable generic character.

NEOPHYLAX ORNATUS, sp. nov.

TYPE.— M. C. Z. 10,875. N. H.: White Mts. (H. K. Morrison).

Yellowish, with pale yellowish hair, some brown hair on sides of face and on sides of the pro- and mesothorax. Legs with black spines. Fore wings with pale yellowish hair, more golden near front margin, with large patches of white, and some black hairs toward tip and in two large patches behind. The white is in the apex of each apical cell and on base of second and third cells, the first and second subapical cells are nearly all white, leaving a dark line, much wider near tip, between them, the third subapical partly pale; a large pale area from behind discal cell, widening out behind, and another over the basal anal region. Hind wings pale, fringes nearly white. In structure and venation similar to *N. concinnus*.

Expanse 27 mm.

IRONOQUIA AUSTRALIS, sp. nov.

TYPE.— M. C. Z. 10,868. Chile (L. Fairmaire, Hagen coll.).

Yellowish; with mostly black hair and bristles, basal joint of antennae brownish, tips of tibiae and tarsal joints darkened, front tibiae with only a few short spines, first tarsal joint nearly twice as long as the second, spurs 1, 2, 2, abdomen brown. Fore wings dull brownish yellow, immaculate, except that the arculus is hyaline white. Fore wings moderately broad, tip rounded, membrane plainly granulate and very densely clothed with erect brown hair; discal cell much longer than pedicel, the first fork reaches barely before the anastomosis, third fork short pedicellate, fourth apical cell nearly twice as broad at base as the third, cubitus not disjointed at the posterior anastomosis; in hind wings the third fork has a pedicel nearly one half its length, membrane also hairy, but not as long nor as densely hairy as the margin. Maxillary palpi of male very long and slender; no ocellar macrochaetae.

Expanse 18 mm.

Differs from the genotype in very different male genitalia, and in pedicellate third fork.

ALGONQUINA CHILENSIS, sp. nov.

TYPE.— M. C. Z. 10,869. Chile: Corral, December (Roland Thaxter).

Pale yellowish, clothed with yellowish hair and bristles, and some brown bristles near wing base. Wings pale yellowish, fore wings very faintly marmorate with pale brown, the appressed hair mostly whitish; hyaline spots on thyridium and arculus; spines on tarsi black, and some black on front tibiae; others on tibiae and the spurs reddish. Antennae slightly crenulate beneath; maxillary palpi rather short, last joint barely longer than the others; ocelli of moderate size, no ocellar macrochaetae, posterior warts transversely elongate; thoracic notum with two submedian strips of bristles, elsewhere it is smooth; legs with spurs 1–3–4, last joint of hind tarsi without spines beneath. Wings rather broad near tip, outer margin oblique, scarcely emarginate; discal cell much longer than its pedicel, first fork broad near base, reaching back but little on discal cell, second fork broad, third acute and almost pedicellate; the anastomosis posteriorly oblique; cubitus and anal veins with long, erect bristles, those on other veins few and inconspicuous; in hind wings the apical cells are long, the third fork with a long pedicel, the discal cell reaching much before fork of median vein; the female genitalia above shows a large deeply incised plate.

Expanse 24 mm.

Although this species agrees fairly well with the North American species in most generic characters, it will doubtless form a new genus when other Chilean Limnephilidae are known.

MAGELLOMYIA, gen. nov.

Last joint of hind tarsus without spines beneath; spurs 1, 2, 3. Distinct ocellar macrochaetae; male palpi only moderately long. Wing membrane not granulate; venation about normal, but third fork in both wings is pedicellate, fourth apical cell in both wings about as broad as third at base; discal cells very long in both wings, and in hind pair reaching much before the fork of the median; first fork of fore wings not extending back of the anastomosis; radius not bent at stigma.

TYPE.— *M. moesta*, sp. nov.

In my table (Can. ent., 1916, **48**, p. 121) it would run to 29, then, out on account of spur formula, would not agree with either alternative. From Hylepsyche it differs in normally divided anal cell, and from most of the other genera in having ocellar macrochaetae, and the nongranulate membrane.

MAGELLOMYIA MOESTA, sp. nov.

TYPE.— M. C. Z. 10,867. Strait of Magellan: near the Hassler Glacier, on detritus 1,200 ft. high, 24 May 1872.

Black, with mostly black bristles, but some on vertex and pronotum are yellowish; palpi pale, antennae brownish, slightly crenulate below; ocellar macrochaetae almost between the ocelli; legs pale, but much of femora, and the tips of other joints darkened, tarsus I with basal joint much longer than second, front tibiae with a few fairly long spines, but none near the base. Abdomen rather larger near tip than elsewhere. Fore wings moderately narrow, outer margin almost oblique; pale brownish, nearly uniform, a few whitish spots, not distinct, except one on the thyridium. In hind wings the first fork is almost pedicellate, and the third fork has a pedicel as long as itself. Expanse 15 mm.

SERICOSTOMATIDAE.

HELICOPSYCHE MULLERI, sp. nov.

TYPE.— M. C. Z. 10,906. Brazil: Santa Catharina (F. Müller, 18).

Dark; head in front mostly pale, clothed with long pale hair, basal joints of antennae pale and with pale hair, also on the posterior warts; antennae pale till near middle where they are rather darker; palpi pale, with brown hair; thorax with mostly brown hair, but each side above near middle is a streak of yellowish hair. Abdomen dark brown; legs pale brown, the tibiae rather darker, the tarsal joints are pale on bases, most broadly on middle tarsi, spurs dark, 2–2–4. Wings dark, clothed with golden and brownish hair, fringe brown, but there are a few pale spots in the apical fringe. In the male the ventral spine is yellowish, very slender, and slightly rounded at tip. Wings slender as in *H. borealis*, in fore wings fourth fork is long and almost reaches the anastomosis.

Expanse 10–11 mm.

HELICOPSYCHE PERUANA, sp. nov.

TYPE.— M. C. Z. 10,905. Peru: Natucana, 7,788 ft., 14 June (H. S. Parish).

Brown; head with brown and some yellowish hair on warts of vertex; basal joints of antennae dark, with some brown, and long yellowish hair, beyond the antennae are dark, the joints narrowly pale at base; palpi pale, with brown hair; hair of thorax largely brown; abdomen dark; legs pale brownish, femora mostly with white hair, tibiae darker, tarsi pale on bases of joints, the mid tarsi broadly so, spurs dark brown. Wings dark, with golden and brown hair, fringe brown, nearly black at tip of the wing; hind wings with black hair and fringe. In male the ventral spine is quite broad at base, triangular, with almost pointed tip. Wings slender as in *H. borealis;* in fore wings the fourth fork has a pedicel nearly one third its own length.

Expanse 11 mm.

GOERA OCTOSPINA, sp. nov.

TYPE.— M. C. Z. 10,883. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Yellowish, clothed with bright yellow hair; maxillary palpi recurved, with rows of yellow hair each side, labial palpi with last two joints long and subequal; basal joint of antennae long, with long, bright yellow hair. Wings clothed with bright yellow hair, especially along the veins. Venation very similar to *G. longispina*, but the enlarged smooth space above anastomosis is larger and more rounded above, the third fork is not pedicellate; in the hind wings all the apical forks are longer and more slender. On the sixth ventral segment there is a slender median process and each side of it four slender spines; the male genitalia from above resemble those of *G. longispina*, but the median spines are less long, the process at tip of lateral appendages is larger, and the lateral processes from near base are also larger than in that species.

Expanse 21 mm.

CALAMOCERATIDAE.

Phylloicus lituratus, sp. nov.

Type.— M. C. Z. 10,901. Colombia: Mariquito, 5 February (E. B. Williamson).

Black; lower part of head, labial palpi, basal joint of antennae, posterior warts, and the prothorax yellow, with mostly yellow hair. Abdomen below and basal half above yellowish, last four segments above brown. Femora pale, middle and hind tibiae black, hind tarsi black, mid tarsi with the basal joint (except extreme tip) white, front tarsi with basal and part of second joints yellowish; spurs 2–4–4, preapical pair on hind tibiae with outer spur very short. Fore wings black, a curved white band from below stigma, concave outward, an inverted white V-mark over base of discal cell, one limb crossing base of median cell, the other limb crossing the apex; near base between anal veins is an oblique white streak.

Expanse 24 mm.

Related to *P. assimilis*, but marks of wings and of mid legs different.

LEPTOCERIDAE.

Leptocerus modestus, sp. nov.

Type.— M. C. Z. 10,890. Borneo: Mindai, Duson Timor, and Kapua near Tumbong Hiang (Grabowsky).

Yellowish brown; palpi gray; vertex, thoracic notum, and anal area of fore wings clothed with long, snow-white hair, also white on margin at arculus; antennae yellowish, base of joints white, apex brown; fore wings of an even dull golden color, the apical fringe black; hind wings hyaline, gray at tip, and fringe gray; abdomen and legs yellowish. Fore wings moderately broad, discal cell very long, reaching back much before the forking of the median vein, in male forks one and three of equal length, with a moderate pedicel, in female the median has the two branches as in typical forms. In the hind wings the median vein is forked.

Expanse 11 mm.

Oecetina australis, sp. nov.

Type.— M. C. Z. 10,916. Victoria: Melbourne (Thorey).

Pale yellowish, clothed with gray hair; antennal joints dark on base; legs pale yellowish, with numerous black tarsal spines. Fore wings pale, veins pale, cross-veins darker, clothed with gray and dark brown hair, small spots of dark hair at forking of veins, over cross-veins, and arculus, most noticeable near arculus and at end of subcosta; outer costal fringe brown, posterior fringe gray; hind wings with brown fringe. The subcosta ends free, but the radius outward from the connecting cross-vein is thicker than elsewhere; discal cell very long, longer than its pedicel, first fork a short distance back on discal cell. In hind wings the first fork is small, but distinct, third fork with a pedicel more than one half its length, fifth fork as long as the third.

Expanse 14 mm.

OECETINA DISJUNCTA, sp. nov.

TYPE.— M. C. Z. 10,915. Calif.: Arroyo Seco Canon, San Gabriel Mts., 17 June, Switzer's Camp, San Gabriel Mts., 21–22 June (F. Grinnell).

Clothed with pale yellowish gray hairs, palpi gray; antennae above with the tips of the joints dark; legs and tarsi pale. Wings yellowish gray, with yellowish hair; veins pale, the anastomosis darker, the three veinlets are each well separated from the next; in the male the costal fringe rather short, much shorter than in *inconspicuus* (*micans*). Abdomen pale; a median dark line above, and the segments near tip dark. The appendages show a large convex plate each side, with a deep emargination near the lower edge.

Expanse 19 mm.

OECETINA ANGUSTA, sp. nov.

TYPE.— M. C. Z. 10,887. Borneo: Duson Timoc, Kapua near Tumbong (Grabowsky).

Pale yellowish, with yellowish, gray, and black hairs. Head, palpi, and antennae with pale hair, latter not distinctly annulate; thorax with yellowish and gray hair. Legs pale yellowish. Fore wings with fine yellow hair, and semierect pale and black scales, mostly along the veins, the black forming distinct spots and streaks; three black spots on upper apical margin, four on lower apical margin, one of the larger spots near costal margin one half way out, another before the stigma, one over thyridium, and various scattered black scales; fringe brown. Hind wings with pale brown hair and fringe. Wings long and slender, first fork acute at base and sessile, third fork long pedicellate, the discal cell is nearly twice as long as its pedicel; hind wings very narrow, acute at tips, outer costal margin concave, first fork inconspicuous, third and fifth forks very short.

Expanse 9 mm.

TRIAENODES PALPALIS, sp. nov.

TYPE.— M. C. Z. 10,895. Kamerun: Ja River, Bitze.

Brown, with yellowish and black hair. Antennae yellowish, tips of joints above dark; maxillary palpi with a long fringe on each side of second, third, and fourth joints, which is black below and yellowish above, these three joints are very long and subequal in length, the fifth joint plainly shorter than any of them. Thorax yellowish brown; abdomen dull, dark brown; legs pale, with yellowish hair. Fore wings with some black and much reddish hair; veins dark, the cubitus and anastomosis hyaline white, first fork scarcely longer than the pedicel, discal cell much longer than pedicel; in hind wing the base of the second apical cell is longer and reaches back farther than the base of the fourth apical cell.

Expanse 26 mm.

Larger than other African species and peculiar on account of short fifth palpal joint.

SETODES TERMINALIS, sp. nov.

TYPE.— M. C. Z. 10,884. Borneo: Duson Timoc (Grabowsky).

Pale yellowish; antennae whitish, annulate with brown; palpi pale yellow, basal joints not at all thickened; head and thorax with white hair; legs whitish. Fore wings clothed with pale yellowish hair and fringe, except on the terminal fifth where there is black hair and fringe enclosing about a dozen snow-white dots, mostly on veins, four of them on the outer margin; hind wings with pale hair, the extreme tip and fringe slightly darker. Wings slender, acute, as in *S. punctata;* first fork with a pedicel one half its length, third fork with a pedicel one fourth its length; in hind wing the first fork almost lost, first apparent fork and the third forks of equal length.

Expanse 10 mm.

LEPTOCELLA GEMMA Müller.

In the collection of the M. C. Z. is a set of Müller's species sent by him to Dr. Hagen. Three species of Leptocella are present, one, *Setodes gemma,* has yellow wings and silver bands. It is smaller than the species figured as *L. gemma* by Ulmer (Gen. insectorum, fasc. 60, pl. 37, fig. 8), and there are no series of black dots near anastomosis and the wing is much more yellow, the two silver bands are farther apart, and there is no trace of the third band; the superior male appendages are deeply forked at tip, each branch of equal length.

Leptocella diminuta, sp. nov.

Type.— M. C. Z. 10,900. British Guiana: Bartica (H. S. Parish).

Whitish, clothed with white hairs, tips of antennal joints barely dark. Fore wings clothed with white hairs and with many black scales through the middle area, forming a more or less distinct slightly curved stripe from near base to toward the tip. Wings rather short, third fork with a pedicel very much shorter than that to first fork. The male genitalia has the superior median plate short, the superior appendages long, slender, not enlarged at tip, and often curved downward, the inferior appendages are slightly sinuous, and almost pointed at the tip.

Expanse 12 to 14 mm.

Leptocella sparsa, sp. nov.

Type.— M. C. Z. 10,899. Argentina — Misiones (Jorgensen).

Body is yellowish, clothed with white hairs; tips of antennal joints dark. Wings with mostly whitish scales on basal part; near middle are three rather yellowish bands, each outlined by black scales, and between them silvery white; in the region of the anastomosis mostly silvery, with numerous black dots tending to form lines or elliptical figures; near the apex are two silvery bands, rest of apical part yellowish, the usual marginal black patch contains four pale spots. The first fork is only a little longer than its pedicel, the third fork with a pedicel about as long as the width of the discal cell. The superior male appendages are cylindrical, but enlarged and truncate at tip, not distinctly emarginate.

Expanse 24 mm.

This is probably the species figured by Dr. Ulmer as *L. gemma.*

Leptocella separata, sp. nov.

Type.— M. C. Z. 10,898. Brazil: Santa Catharina Province (F. Müller); Rio de Janeiro (B. P. Mann).

Pale yellowish, clothed with white hair; antennae broadly banded with brown. Fore wings clothed with white hair; in basal third there are black streaks on several veins, and in apical third black spots on apical veins, between are several (about four) oblique yellowish bands, one from the stigma, one beyond and connected to it; and before the stigma an oblique band and a part of another starting from hind border; sometimes there is more yellow in the basal portion; venation about as in other species, the discal cell does not reach to fork of median vein, and first and third forks are subequal. In male genitalia the superior appendages have the tip very broad; the superior median piece is extremely short.

Expanse 24 mm.

HYDROPSYCHIDAE.

Aethaloptera dyakana, sp. nov.

Type.— M. C. Z. 10,885. Borneo: Duson Timoc (Grabowsky).

Pale greenish white; basal joints of antennae more red-brown, other joints broadly annulate with brown. Wings greenish hyaline; fore wing with six small dark spots; one on cross-vein connecting the anals, the next on cross-vein from first anal to cubitus, one on base of connecting veinlet to median cell, a small one at base of median cell and one on the radius obliquely above it, one on the anastomosis, and scarcely visible one on veinlet above anastomosis to the radius. The venation is similar to that of Indian specimens of *A. sexpunctata*, but the relation of anal veins to arculus is very different (Plate **6**, fig. 72), the median cell, is larger, and the veinlet connecting the median cell to the cubitus extends towards base of wing, instead of outwardly.

Expanse 15 mm.

Amphipsyche parva, sp. nov.

Type.— M. C. Z. 10,886. Borneo: Mindai (Grabowsky).

Whitish; wings hyaline, with whitish veins; some of the antennal joints very narrowly dark at tips; postantennal warts hemispherical (♂), not their diameter apart. Venation of the male similar to that of *A. proluta;* the radius is more strongly sinuate at stigma, the pedicel of the first fork is concave above, and the vein behind it also a little curved; the median vein at base of median cell runs obliquely upward before going straight back to wing-base. Differs from the Javan *A. meridiana* (♂ unknown) in the longer first fork, in the sessile fourth fork, and in that the veinlet from median cell to the cubitus runs backward, instead of outward, and in the course of median vein at base of median cell.

Expanse 16 mm.

Macronema quinquepunctatum, sp. nov.

Type.— M. C. Z. 10,889. Philippines — Luzon: Nueva Vizcaya; Imugin (C. F. Baker).

Pale yellowish throughout; tips of antennal joints narrowly dark; wings yellowish, each fore wing with five black spots, subequal in size. The most basal one is on the cross-vein between cubitus and medius, the next is on the upper side of the anal vein about one half way out, the third on the radial sector about one half way to discal cell, the next on the cross-vein behind the median cell, and the fifth above the discal cell; hind wings unmarked. In structure closely similar to *M. fasciatum;* in the hind wings the sixth apical cell extends even a little before the cross-vein; in fore wings the discal and median cells about as in *M. fasciatum.* The apical segment of the inferior male appendages is shorter than in *M. fasciatum.*

Expanse 30 mm.

Macronema obscurum, sp. nov.

Type.— M. C. Z. 10,892. Madagascar: Tananarive (Chulliat).

Face brown, palpi brown, basal joint of antennae dark brown, second joint yellowish, beyond black, vertex black, warts pale brown, thorax shining black, abdomen dull brown, legs yellowish, femora and tarsi rather darker. Wings densely clothed with fine black hair, the basal costal space pale, and with several mostly rounded, spots of pale hair, the largest spot over the base of median cell, about four spots before it, and three beyond it, one of which is below the discal cell, one near arculus, and one just before end of radius; hind wings with black hair, the costal space yellowish. Venation very much as in *M. scriptum.* The maxillary palpi have the second joint longer than the first, the third joint nearly one and a half times the second, the fourth about two thirds of the third.

Expanse 21 mm.

Macronema subaequalis, sp. nov.

Type.— M. C. Z. 10,903. Argentina — Misiones: Haut Parana, San Ignacio, May (Wagner).

Black, head (except vertex) golden, with golden hair; antennae black; palpi black on base, pale beyond, the second, third, and fourth joints short, subequal; postantennal warts small, yellowish. Thorax and abdomen black; legs yellowish, front tibiae largely dark, tips of tarsi dark. Fore wing dark brown; two large, costal, yellowish spots, one beyond middle, other near stigmal region; hind wing also brown, and also with two costal, pale spots, about in same position. Fore wings rather narrow; discal cell small, but not distinctly closed, first and second anal veins unite long before widest part of anal area; median cell not very large. In hind wings the first sector complete, connected by short cross-vein to the radius.

Expanse 22 mm.

Belongs to Pseudomacronema, but I do not think that genus is sufficiently distinct from Macronema.

MACRONEMA ERICHSONI, sp. nov.

TYPE.— M. C. Z. 10,902. French Guiana: Nouveau Chantier, June (Le Moult).

Black; palpi, pronotum, and most of legs pale yellowish, the front tibiae and the tips of the others blackish. Fore wings mostly black; two subbasal streaks, an upper median spot, a transverse band before stigma, and two elongate spots in the lower apical part of wing are hyaline. Hind wings with dark veins; the tip, a small costal spot, and extreme base dark. Wings moderately slender, the discal cell of good size, as long as broad; the median cell rather small, three times as long as broad, its tip not beyond tip of discal cell; first fork with short pedicel. In the hind wings the radius runs into the first sector, and the cross-vein is at base of the fourth fork.

Expanse 22 mm.

PODOMACRONEMA, gen. nov.

Related to Plectromacronema, but the spurs are 2, 4, 4, and the front leg (in male at least) has the tibia and basitarsus broad and flattened, as is seen in the middle legs of other genera. Head much swollen in front, vertex with triangular plate hardly as prominent as in Plectromacronema; maxillary palpi slender, second joint much longer than the third or fourth which are subequal. Venation much as in Plectromacronema, and the outer side of the fore wing excised near middle.

TYPE.— *P. subfuscum*, sp. nov.

PODOMACRONEMA SUBFUSCUM, sp. nov.

TYPE.— M. C. Z. 10,904. Argentina — Misiones, 1909 (Jorgensen).

Yellowish brown; head more yellow, the swollen face brown; antennae yellow, the joints narrowly dark at tip; thorax dark brown, abdomen yellow brown, darker at tip; legs pale, front femora rather dark, front tibia and basitarsus with a dark band. Fore wings brown, some pale patches in the costal area; a long, hyaline streak behind the radius, several small spots near the anastomosis, and five silvery marks in apical region; an oblique, curved mark over basal parts of second and third apical cells, a small spot beyond of fourth apical cell, two narrow bands from the costa, the outer one the longer, and parallel to outer margin, and a fainter streak in the first subapical cell. Hind wings brownish, darker on tip and along the cubitus. The first sector unites for a short distance with the radius and then separates.

Expanse 34 mm.

LEPTONEMA NORMALIS, sp. nov.

TYPE.— M. C. Z. 10,891. Kamerun: Ja River (Bitze).

Pale yellowish, with yellowish hair; antennae more brownish; spurs brownish. Wings with fine yellowish hair, unmarked. Maxillary palpi long, second joint one and one half times third, fourth nearly as long as second. Wings have the subcosta running into radius in both pairs, other venation very similar to *L. occidentale*, but the median cell is shorter, and the cross-vein behind this is nearer to base of the fourth fork than to base of median cell; in hind wings the vein between third and fifth forks arises from a transverse cross-vein.

Expanse 25–26 mm.

Differs from *L. occidentale* in much paler color and the ending of subcosta in fore wings.

HYDROPSYCHE LONGIPALPIS, sp. nov.

TYPE.— M. C. Z. 10,894. Madagascar: Tananarive (Chulliat).

Pale brown, clothed with yellowish or golden hair; antennae pale, above with tips and bases of joints broadly dark; legs pale, tarsi more reddish; fore wings densely clothed with short, fine golden hair, without marks; hind wings infuscated near tip. Palpi extremely long, the fifth joint much longer than the others together, fully as long as the middle tibia; venation of typical Hydropsyche; discal cell nearly twice as long as broad, more than one half as long as median cell; first fork with a pedicel one half its length, third fork with a short pedicel; in hind wings first fork very small, but distinct, second fork reaches back almost to cross-vein back of discal cell, third fork shorter than the second.

Expanse 24 mm.

HYDROPSYCHODES PALLIDA, sp. nov.

TYPE.— M. C. Z. 10,897. Madagascar: Tananarive (Chulliat).

Yellowish brown, clothed with yellowish hair; antennae pale, scarcely annulate with dark at tips of the joints; wings pale yellowish gray, with yellow hair and some black hair in places, but not forming markings except on apical part where there are several black spots on the costa faintly continued back for a short distance as bands. Palpi moderately long, fifth joint as long as others together; wings with typical Hydropsyche venation, except that there is no first fork in hind wings. In the fore wings the first fork has a pedicel nearly one half of its length, third fork very short pedicellate; discal cell fully three times as long as broad, median cell over one and one half times as long as the discal cell.

Expanse 17 mm.

HYDROMANICUS EXTREMUS, sp. nov.

TYPE.— M. C. Z. 10,888. Borneo: Telang (Grabowsky).

Dark; clothed with yellowish hair, on head and thorax mostly golden yellow; antennae pale yellowish, not annulate. Fore wings with yellowish hair, densely marmorate with pale brown, the largest mark is one near costa before stigma; hind wings faintly fumose near tip, the veins brownish. In fore wings the discal cell is of moderate length, about one half of third sector; first fork with a pedicel one half of fork, second fork reaches discal cell, third fork with a pedicel more than one half of fork, end of median cell is as far out as end of discal cell. In the hind wings the curvature of the subcosta and radius is extreme, so that in bending back they touch the discal cell, the radius apparently uniting with the radial sector for a short distance, and before that the radius and subcosta are almost united for a long distance.

Expanse 12–13 mm.

The smallest described species.

PLECTROCNEMIA FURCATA, sp. nov.

TYPE.— M. C. Z. 10,913. India: Lebong.

Yellowish brown, clothed with yellowish and brown hair. Antennae pale yellow, palpi more brown; pronotum yellow, rest of thorax brown, legs brownish. Wings pale brownish, with golden and blackish hair, stigma long, dark brown, several cross-veins in part whitish hyaline; in hind wings stigma also dark. Discal cell longer than pedicel, first fork as long as its pedicel, third fork short pedicellate; in hind wings the discal cell is very short and closed. The lower appendages of the male genitalia are long, slender, upcurved, the reddish chitinous pieces each side of the superior median plate are deeply furcate, each branch slender, acuminate, the inner branch strongly bent downward.

Expanse 19 mm.

SMICRIDEA AEQUALIS, sp. nov.

TYPE.— M. C. Z. 10,911. British Guiana: Bartica, December (H. S. Parish).

Black, with black hair, some white hair above the antennae in front; antennae yellowish brown; front legs mostly pale, middle legs dark on femora, tibiae and tarsi wholly pale, hind legs dark, tarsi pale. Wings black, with black hair, a narrow, white, interrupted band from near stigma to arculus. Hind wings densely black-haired. In general similar to *S. nigripennis*, but the lateral male appendages as well as the superior median piece are much shorter.

Expanse 9 mm.

SMICRIDEA NIGRIPENNIS, sp. nov.

TYPE.— M. C. Z. 10,912. Colombia: Caldras, Cali (H. Fassl).

Black, with mostly black hair, a patch of short, appressed white hair just above and between the antennae; tips of palpi pale, legs black, middle tibia white on the outer base, and these tarsi wholly pale whitish, front legs mostly yellowish. Wings deep black, black haired, a curved, white band from stigma, reaching nearly across wing, and another before middle from costa also reaching nearly across; apical fringe white, outer angle and elsewhere black; hind wings black. Venation as usual, end of discal cell is continuous with end of median. Lateral appendages of male genitalia very long and slender, the basal segment clavate.

Expanse 8 to 9 mm.

SMICRIDEA MACULATA, sp. nov.

TYPE.— M. C. Z. 10,910. Brazil (Winthem coll.).

Black; head and thorax mostly clothed with short rufous hair; antennae dark brown; legs yellow brown, tarsi rather darker. Wings brown, almost black at apex; on the cubitus just beyond anal cell is a white spot, and several white spots from stigma to arculus almost forming a band; fringe at extreme apex of wing white, elsewhere brown; hind wings densely clothed with dark brown hairs, and long brown fringe. Male genitalia shows the last part of the lateral appendage enlarged at tip; the superior median plate only slightly wider in middle than at the bilobed tip.

Expanse 15 mm.

Related to *S. albosignata*, but much larger, and the appendages different. It is the *Chimarrha* (?) *maculata* of Hagen's South American list.

CHIMARRHA PUMILA, sp. nov.

TYPE.— M. C. Z. 10,908 Ecuador: Quevado (F. Rosenberg).

Brown; head with some brown hair, but most of that in front and behind is yellowish or grayish; antennae and palpi brown, latter with second and third joints long, subequal, fourth much shorter, fifth as long as third, slender; legs pale, especially the femora, darker on tarsi, spurs nearly black. Wings faintly brown, with few brown hairs; venation much as in *C. bidens*, but the radial sector near base of discal cell is more strongly bent and in a longer curve; the median cell is longer than discal, and the first fork is broad at base on discal cell. In the hind wings the discal cell is much more slender than in *C. bidens*, and the first and second forks reach back farther on the cell. In the female the seventh ventral segment is slightly prolonged in the middle.

Expanse 8 mm.

CHIMARRHA PERSIMILIS, sp. nov.

TYPE.— M. C. Z. 10,907. Ecuador: Quevado (F. Rosenberg).

Yellowish brown, clothed with yellowish and gray hair; hair of head very dense and erect, yellowish, behind on vertex nearly black; male palpi dark, large and heavy, second and third joints subequal, as long as the fifth, fourth about one half as long as fifth. Tips of abdominal segments pale. Wings pale brownish, clothed with yellowish hair, venation as in *C. consimilis* and *C. immaculata*, but third fork has a longer pedicel. The male genitalia have the lower appendages long and tapering, the median piece as in *C. immaculata*, the superior appendages slender, upcurved; seen from above there is no spined plate as in *C. immaculata*.

Expanse 12 mm.

Closely allied to *C. consimilis* of Peru and *C. immaculata* of Bolivia, and these are probably the sexes of one species. The male genitalia separates it from the latter; the dark hair on head, and shorter third fork from the former.

CHIMARRHA TEXANA, sp. nov.

TYPE.— M. C. Z. 10,914. Texas: San Antonio, August (F. H. Snow).

Black; head with brown hair; antennae, legs and spurs brown; wings brown, with some black hair, a large spot of yellowish white hair behind stigma, reaching one half way across wing, a narrow band of similar hairs over the base of fourth fork to the arculus, and a broad streak in the basal part of wing. Palpi with the third joint no longer than the second, neither longer than the fifth, fourth swollen below, rather more than one half of the fifth. Wings with discal cell and the radial sector at its base not modified; third fork longer than its pedicel; discal cell reaches back to base of median cell; venation brown, anastomosis, veinlet at base of median cell, and the arculus hyaline white.

Expanse 15 to 16 mm.

PROTODIPSEUDOPSIS BICINCTA, sp. nov.

TYPE.— M. C. Z. 10,893. Kamerun: Ja River, Bitze.

Head black, with some yellow hair; palpi and antennae yellow, latter with scattered black hair, thorax and abdomen dark brown; pronotum with black hair; legs pale yellowish. Wings dark brown, clothed with fine golden hair and much longer black hair; fore wings with a pale band just beyond the anastomosis, and an oblique band, wider behind, just before bases of discal and median cells, both clothed with dull yellowish hair, and not as prominent as in *P. sjostedti;* veins dark, the lower anastomosis and the thyridium hyaline white; hind wings dark in front, paler behind and at base, veins dark, the cross-vein at base of fifth fork is margined with white. Fore wings rather longer in apical part than in *P. sjostedti;* venation much as in that species; in fore wings third fork has a shorter pedicel; in hind wings the second fork reaches the discal cell.

Expanse 26 mm.

DIPSEUDOPSIS CURVATA, sp. nov.

TYPE.— M. C. Z. 10,896. Madagascar: Tananarive (Chulliat).

A large brown species without marks in the male. Antennae and legs yellowish brown; palpi black; tips of tibiae black; segments of abdomen marked with black on sides. Fore wings yellowish brown, veins brown, the cross-vein at base of median cell and the arculus hyaline white; hind wings faintly fumose, veins yellowish brown; the female has paler wings, almost gray, the cubitus and its lower branch deep brown, and the cross-vein to first anal marked with brown, a short, dark streak on radius near the base, and the anastomosis brown. Maxillary palpi with third joint a little longer than the second, fourth scarcely as long as second, much thinner; inner spur of hind tibia not much longer than other, near its tip it is curved and twisted into an acuminate spine. Fore wings slender, tip elongate, nearly acute. Venation similar to *D. immaculata,* the discal cell rather shorter, first fork distinct, third fork twice its pedicel; in hind wings fifth fork is wider than in *D. immaculata.*

Expanse ♂ 32 mm.; ♀ 37 mm.

DIPSEUDOPSIS ELONGATA, sp. nov.

TYPE.— M. C. Z. 10,882. Borneo: Sandakan (C. F. Baker).

Black; posterior margin of vertex reddish; abdomen brown, the segments paler on tips; legs dull yellowish. Wings blackish, darkest near stigma; hairs and veins black; a small pale spot behind fourth fork, and a large, elongate, pale spot from tip of anal veins back along anal margin, a hyaline dot on the thyridium; venation very similar to *D. nervosa,* the inner spur of hind tibia is very long, more than one half as long as hind tibia, more than twice as long as the outer spur, the tip is enlarged foot-like, the edge with fine erect hair, the claw bent around one end. The male genitalia show a rounded lobe each side.

Expanse 35 mm.

GUNUNGIELLA NIETNERI, sp. nov.

TYPE.— M. C. Z. 10,917. Ceylon (Nietner, Hagen coll.).

Head and thorax yellowish, with some golden and some brownish hair; maxillary palpi dark, very long as in *G. reducta.* Antennae wholly pale; head high above eyes, the posterior warts large, yellow. Abdomen dark brown; legs yellowish brown, the hind tibiae with a fringe of long hair on the outer side. Wings brown, the fore wings with fine mostly golden hair, and brown fringe, a whitish hyaline dot on thyridium, on anastomosis and transverse line over anastomosis; hind wings darker than fore wings, with mostly black fringe. Venation similar to *G. reducta,* but in the fore wing the fifth fork is much broader, each side more rounded, and in the hind wings the second fork is almost twice as long as in that species, and the fifth fork is very broad as in the fore wings.

Expanse 10 mm.

RHYACOPHILIDAE.

APSILOCHOREMA DIFFINIS, sp. nov.

TYPE.— M. C. Z. 10,918. Ceylon (Nietner, Hagen coll.).

Brown, clothed with yellowish and brown hair, that on head and thorax mostly yellow; palpi brown; antennae pale on base, gradually darker beyond; legs yellowish brown, the tibia paler at insertion of spurs; fore wings with erect brown and yellow hair, mostly brown, two streaks of black hair near middle, in apical part with appressed brown and pale yellowish hair; fringe brown, darkest at apex; hind wings gray, fringe and veins brown. Venation in general similar to *A. indicum,* but the false cell near the middle of wing has the outer side much more oblique, third fork shorter; in the hind wings the third fork is much shorter than the second. In the male genitalia the lower appendages are widest near the middle, and seen from above have a large, curved tooth toward inner tip.

Expanse 12 to 14 mm.

EXPLANATION OF THE PLATES.

PLATE 1.

PLATE 1.

Fig. 1. Psocus sticticus, fore wing.
Fig. 2. Psocus memorialis, fore wing.
Fig. 3. Macronema subaequalis, maxillary palpus.
Fig. 4. Podopterocus longicornis, fore wing and hind tibia.
Fig. 5. Limnephilus morrisoni, top of female genitalia.
Fig. 6. Caecilius reductus, fore wing.
Fig. 7. Psocus coquilletti, fore wing.
Fig. 8. Psocus hermosus, fore wing.
Fig. 9. Acroneuria manchuriana, side of male genitalia.
Fig. 10. Allopsocus marginalis, wings.
Fig. 11. Allopsocus marginalis, head and antenna, above.
Fig. 12. Anisogamus edwardsi, male genitalia side view.
Fig. 13. Dipseudopsis elongata, spur of hind tibia.

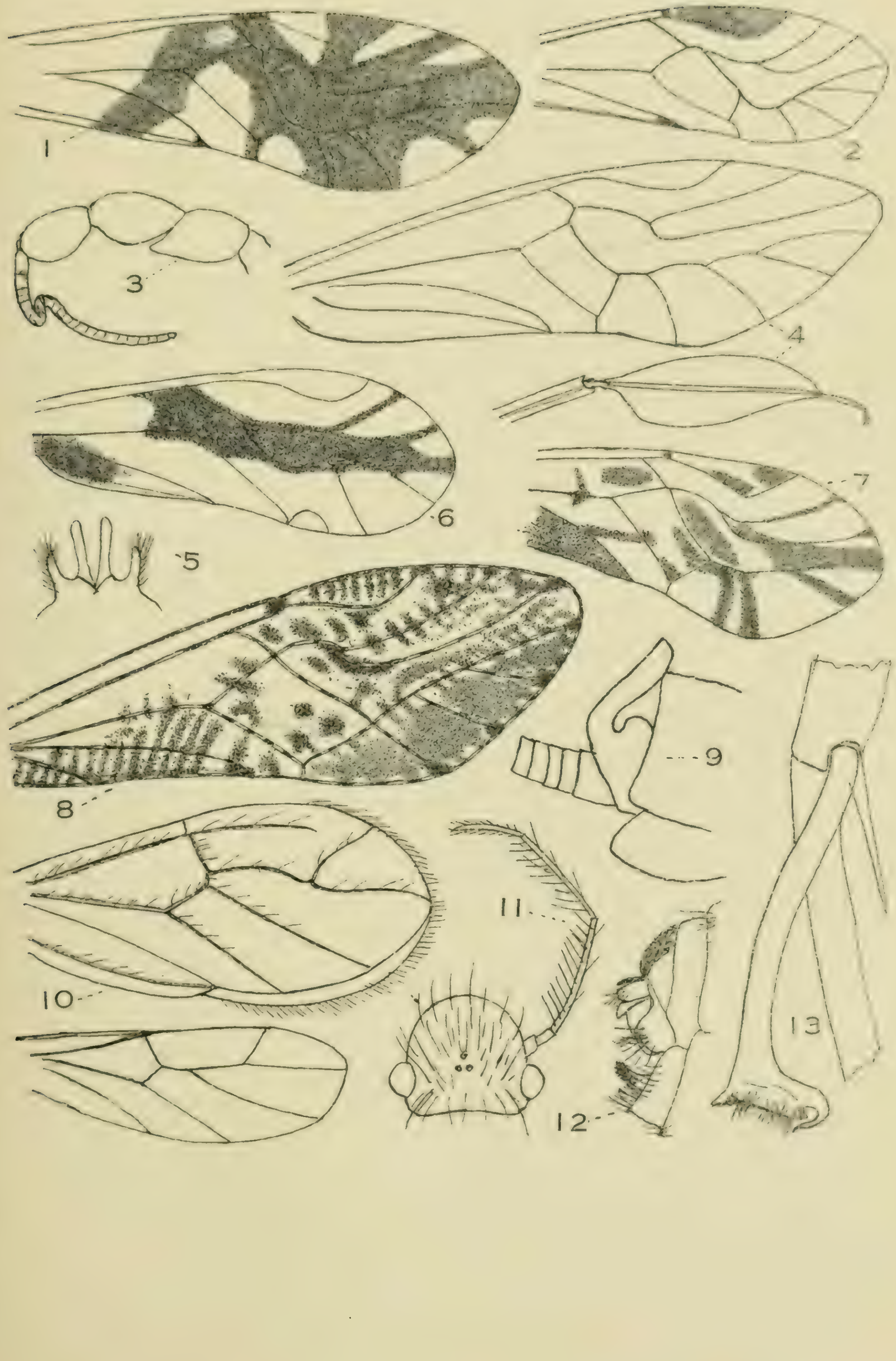


PLATE 2.

PLATE 2.

Fig. 14. Psocus viscayana, fore wing.
Fig. 15. Psocus interruptus, fore wing.
Fig. 16. Podomacronema subfuscum, front leg.
Fig. 17. Psocus pulchellus, fore wing.
Fig. 18. Psocus borneensis, stigma of fore wing and antenna.
Fig. 19. Psocus aztecanus fore wing.
Fig. 20. Podomacronema subfuscum, fore wing.
Fig. 21. Apsilochorema diffinis, male genitalia top view.
Fig. 22. Hydropsyche longipalpis, male genitalia side view.
Fig. 23. Kathroperla perdita, head and pronotum.
Fig. 24. Dinopsocus semicoloratus, fore wing and antenna.

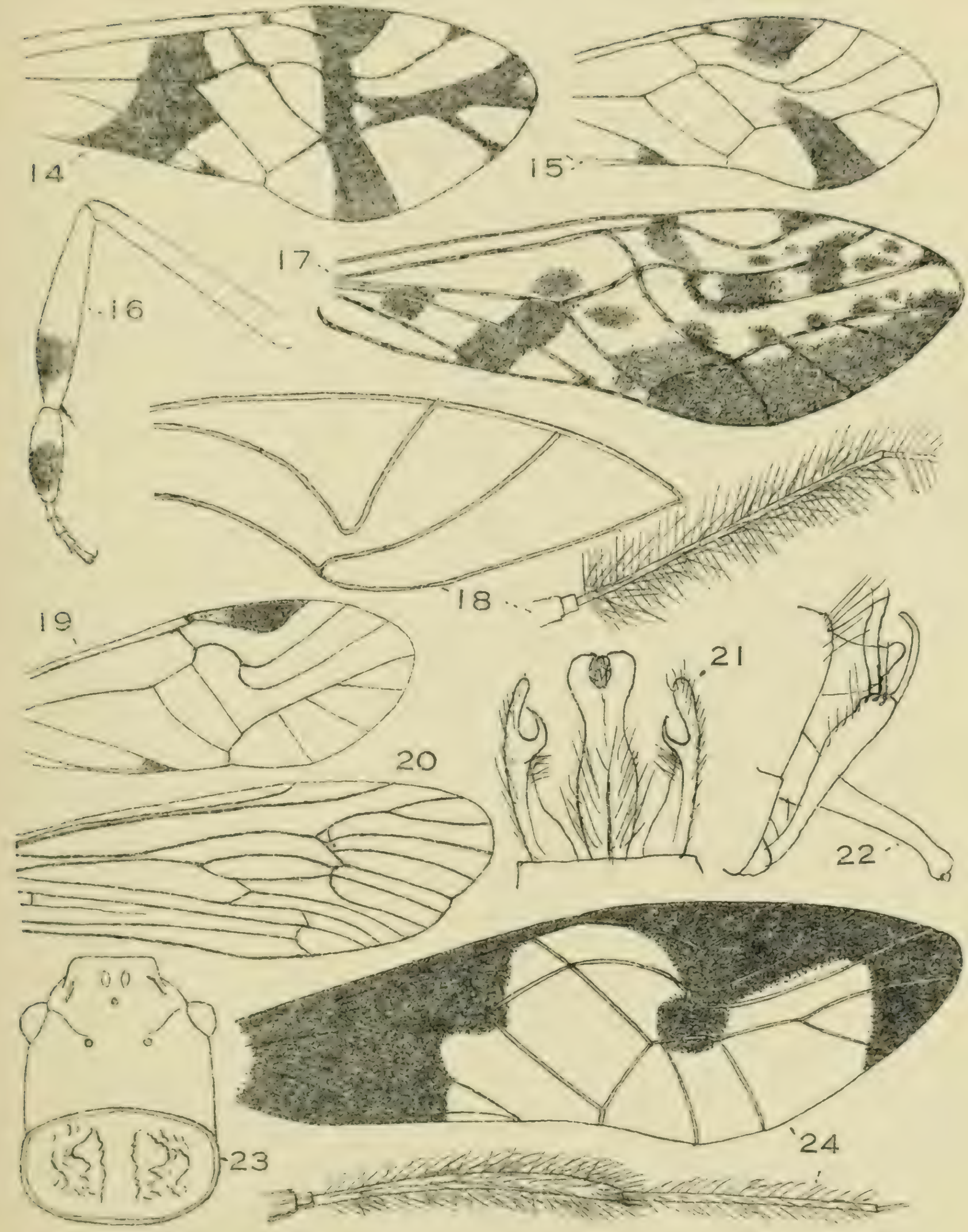
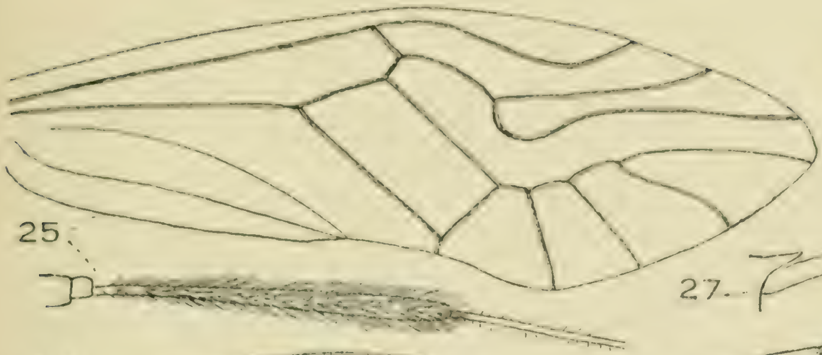


PLATE 3.

PLATE 3.

Fig. 25. Dinopsocus atratus, fore wing and antenna.
Fig. 26. Raphidia bifurca, superior plate, male genitalia.
Fig. 27. Leptocella gemma, superior appendage male genitalia.
Fig. 28. Psocus parishi, fore wing.
Fig. 29. Psocus elegantula, fore wing.
Fig. 30. Hydromanicus extremus, hind wing.
Fig. 31. Epipsocus pictus, fore wing.
Fig. 32. Limnephilus morrisoni, top, male genitalia.
Fig. 33. Psocus lepidus, fore wing.
Fig. 34. Psocus quadrisignatus, fore wing.
Fig. 35. Magellomyia moesta, top, male genitalia.
Fig. 36. Zachobiella punctata, fore wing.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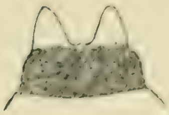
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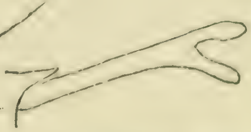
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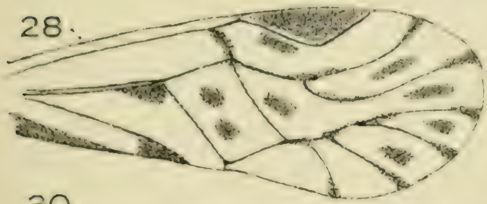
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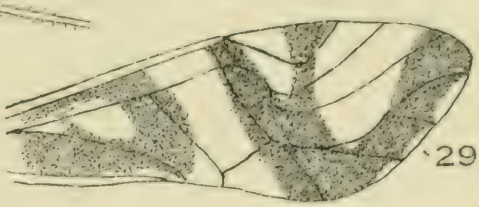
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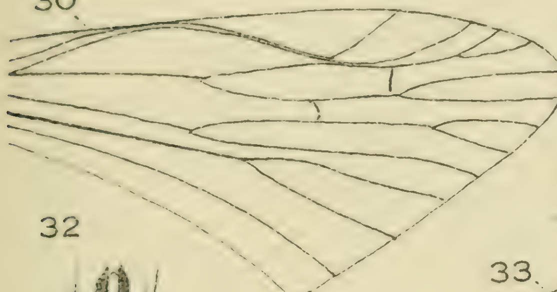
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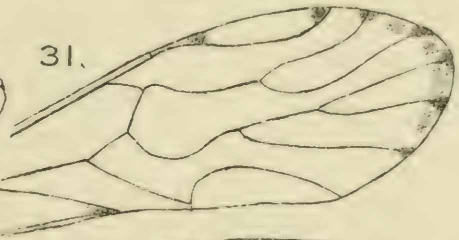
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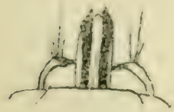
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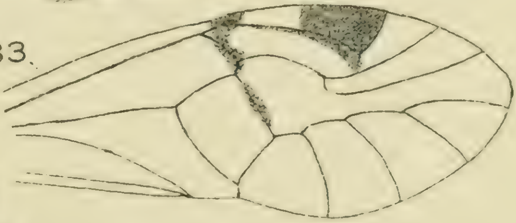
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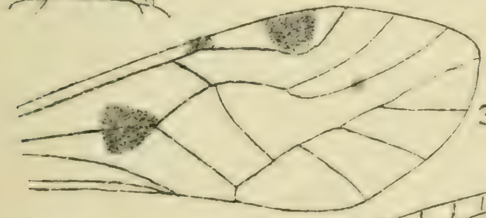
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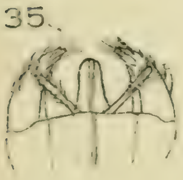
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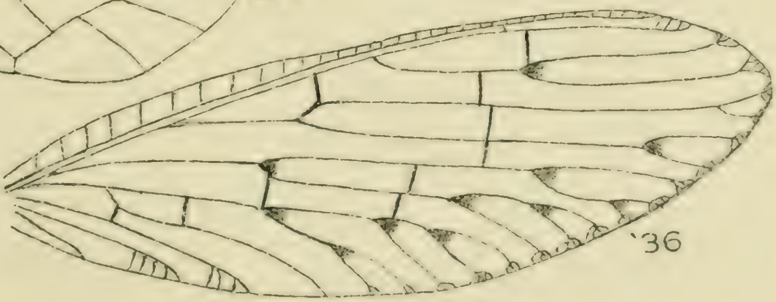
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PLATE 4.

PLATE 4.

Fig. 37. Perla expansa, female, ventral plate.
Fig. 38. Perla subvarians, female, ventral plate.
Fig. 39. Nemoura javanica, male genitalia from below.
Fig. 40. Isoperla mormona, female, ventral plate.
Fig. 41. Perla verticalis, female, ventral plate.
Fig. 42. Perla incesta, female, ventral plate.
Fig. 43. Alloperla fidelis, female, ventral plate.
Fig. 44. Perla anamensis, female, ventral plate.
Fig. 45. Leuctra malayana, male genitalia from below.
Fig. 46. Perla repanda, base of fore wing.
Fig. 47. Perla repanda, male, genitalia from below.
Fig. 48. Kathroperla perdita, female, ventral plate.
Fig. 49. Oyamia nigripennis, female, ventral plate.
Fig. 50. Oyamia nigripennis, male genitalia from above.
Fig. 51. Perla carletoni, female, ventral plate.

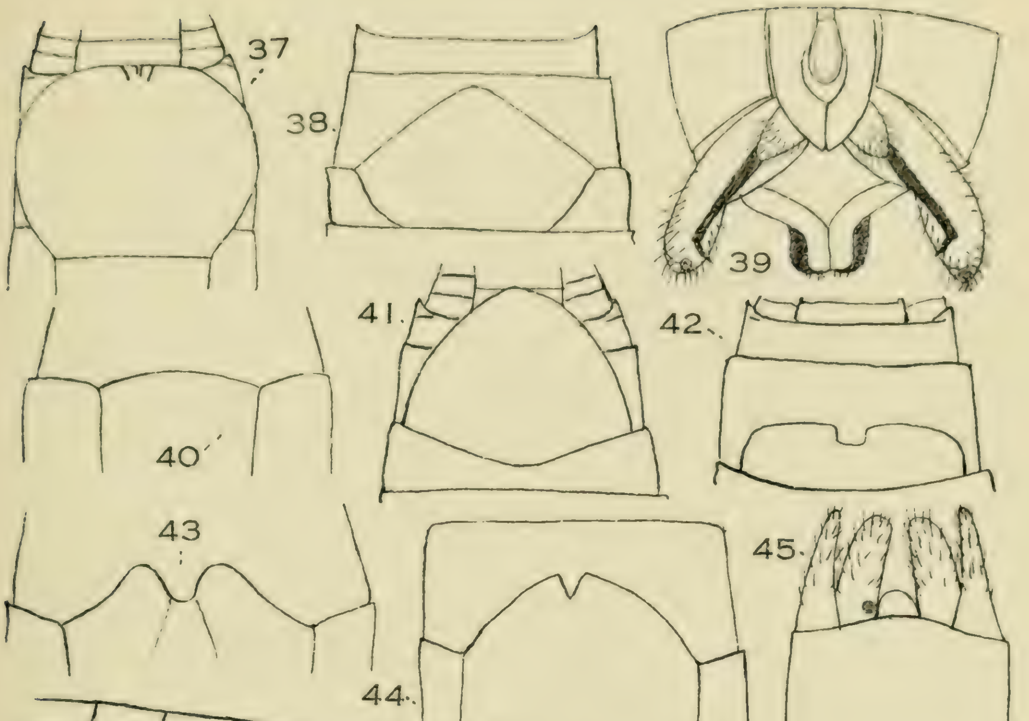
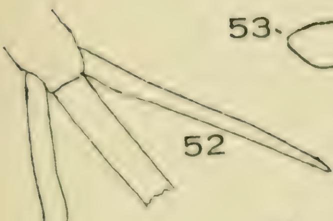


PLATE 5.

PLATE 5.

Fig. 52. Dipseudopsis curvata, spurs of hind tibia.
Fig. 53. Leptocella separata, male genitalia side view.
Fig. 54. Isoperla isolata, female, ventral plate.
Fig. 55. Plectrocnemia furcata, male genitalia top view.
Fig. 56. Smicridea nigripennis, male genitalia top view.
Fig. 57. Anabolia curta, male genitalia side view.
Fig. 58. Smicridea aequalis, male genitalia top view.
Fig. 59. Chimarrha persimilis, male genitalia side view.
Fig. 60. Perla nirvana, female, ventral plate.
Fig. 61. Nemoura stylata, male genitalia from below.
Fig. 62. Macronema erichsoni, fore wing.
Fig. 63. Anisogamus edwardsi, female appendages top view.
Fig. 64. Acroneuria manchuriana, male, genitalia top view.
Fig. 65. Plectrocnemia furcata, male genitalia side view.
Fig. 66. Smicridea maculata, male genitalia side view.
Fig. 67. Phylloicus lituratus, male genitalia from above.
Fig. 68. Perla duplicata, male genitalia from below.
Fig. 69. Limnephilus kennicotti, male genitalia top.
Fig. 70. Neoperla remota, female, ventral plate.
Fig. 71. Acroneuria manchuriana, female, ventral plate.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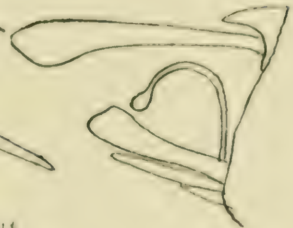
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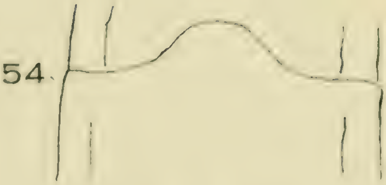
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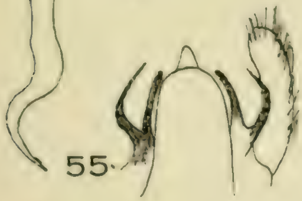
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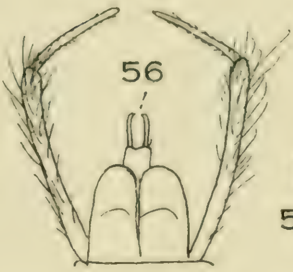
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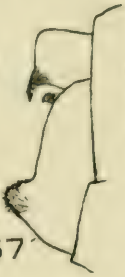
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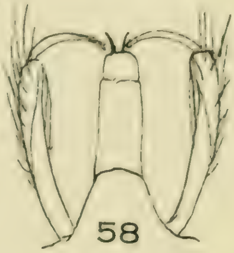
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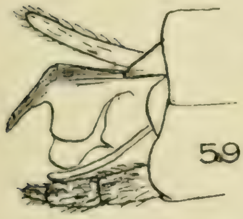
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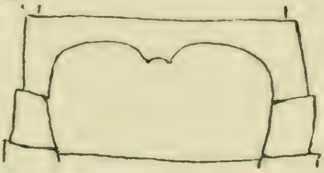
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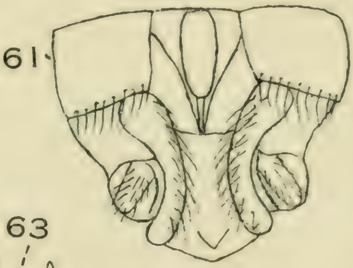
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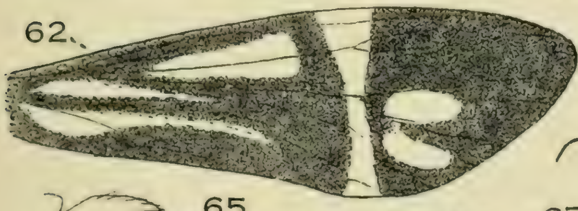
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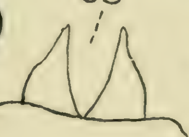
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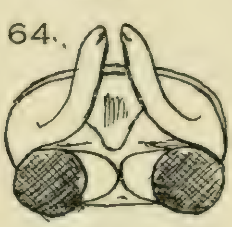
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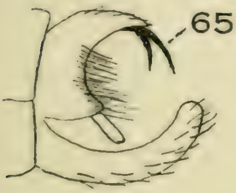
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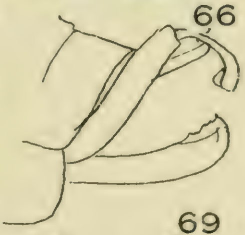
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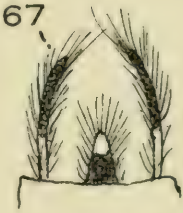
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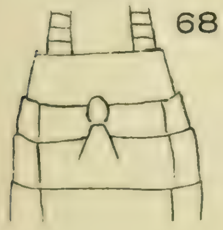
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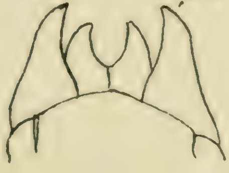
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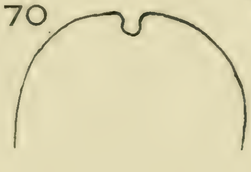
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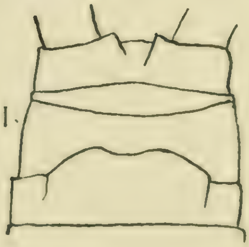
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PLATE 6.

PLATE 6.

Fig. 72. Aethaloptera dyakana, fore wing.
Fig. 73. Amphipsyche parva, fore wing.
Fig. 74. Podomacronema subfuscum, male, genitalia side.
Fig. 75. Mantispa verticalis, head and pronotum.
Fig. 76. Hemerobius tagalicus, male genitalia side view.
Fig. 77. Notiobiella valida, male, part of fore wing, genitalia.
Fig. 78. Magellomyia moesta, fore wing.
Fig. 79. Peripsocus pumilus, fore wing.
Fig. 80. Magellomyia moesta, male, palpi and genitalia.
Fig. 81. Goera octospina, male genitalia above, and margin of sixth ventral segment.
Fig. 82. Phylloicus lituratus, male genitalia side view.
Fig. 83. Paranotoperla thoreyi, male genitalia top view.
Fig. 84. Leptocella diminuta, male genitalia side view.
Fig. 85. Paranotoperla thoreyi, fore wing.
Fig. 86. Nemoura javanica, male genitalia side view.

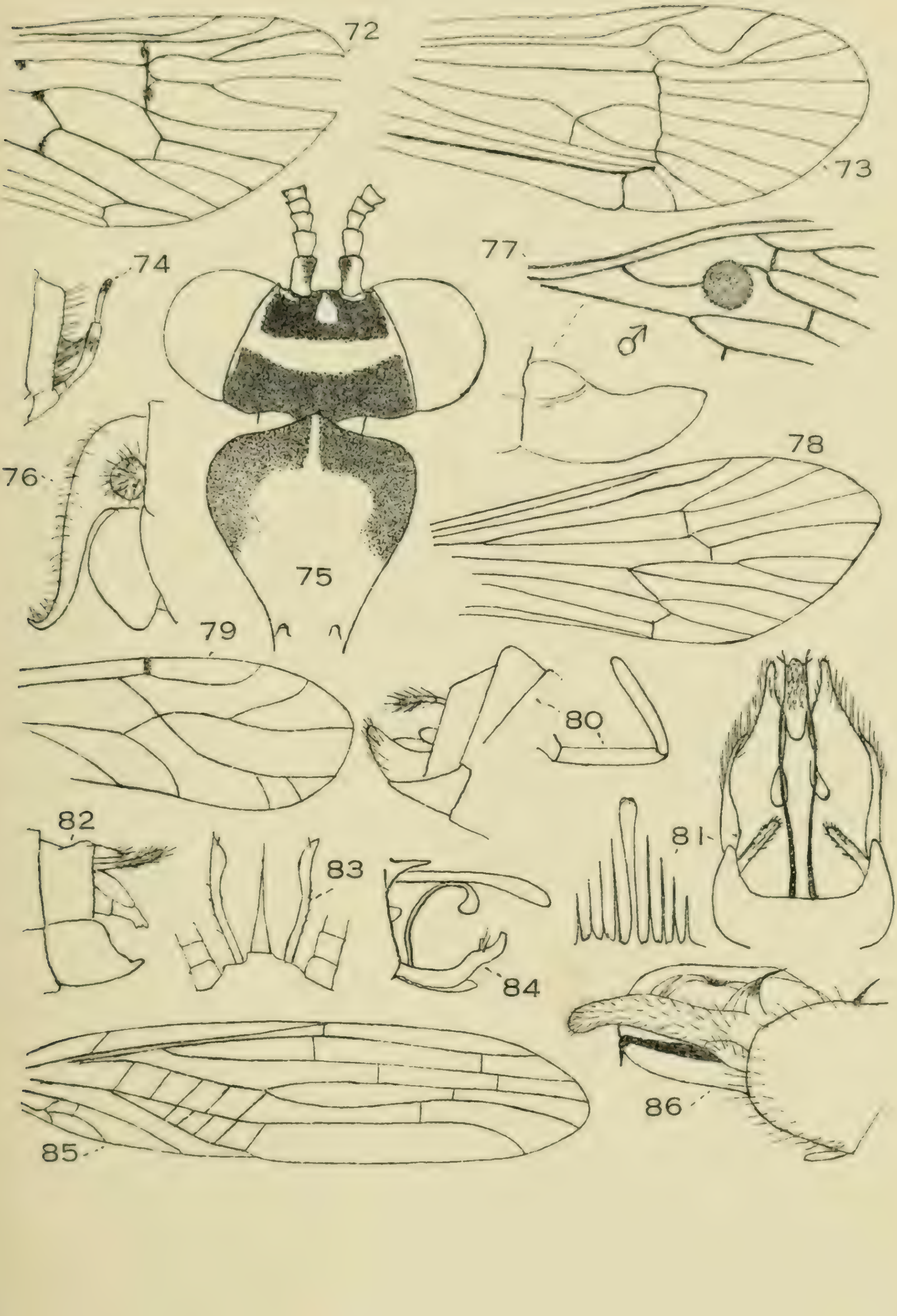
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PLATE 7.

PLATE 7.

Fig. 87. Smicridea nigripennis, male genitalia side view.
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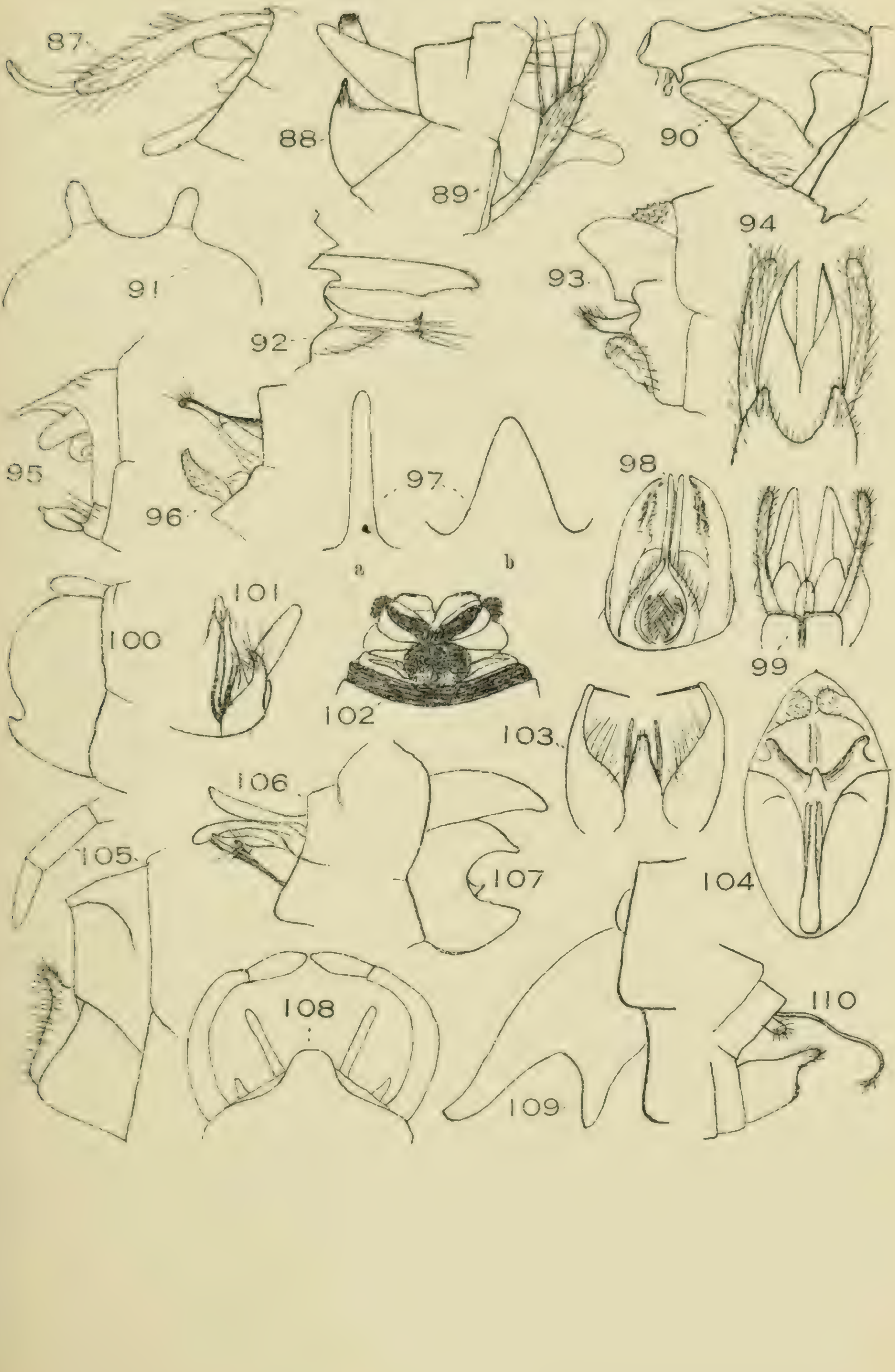
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NOTES ON SOME AMERICAN BIRDS, CHIEFLY NEOTROPICAL

BY OUTRAM BANGS AND THOMAS E. PENARD.

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No. 4.— *Notes on some American Birds, chiefly Neotropical.*

By Outram Bangs and Thomas E. Penard.

In the present paper we deal chiefly with some neotropical birds, erecting two new genera, describing one new species and five new subspecies, and reviewing the forms of a number of species, involving some changes and corrections in the nomenclature and synonymy of several forms.

All measurements are in millimeters; the tail is measured from the base of the free tail feathers to the extreme tip.

We are indebted, for the loan of specimens, to Dr. Frank M. Chapman of the American Museum of Natural History, Mr. Charles B. Cory of the Field Museum, Dr. Charles W. Richmond of the National Museum, and Mr. W. E. Clyde Todd of the Carnegie Museum.

A NEW SUBSPECIES OF CROTOPHAGA SULCIROSTRIS SWAINSON.

Crotophaga sulcirostris pallidula, subsp. nov.

Type.— M. C. Z. 217,148. Adult ♂. Lower California: San José del Cabo, 12 October, 1887. M. Abbott Frazar.

Subspecific characters.— Similar to *Crotophaga sulcirostris sulcirostris* Swainson of Mexico, and of about the same size, but much paler and with less purplish iridescence; the U-shaped iridescent markings of the back and breast paler and duller greenish, not so brilliant; the dull purplish bronze of the head and neck of true *sulcirostris* replaced by paler, more grayish bronze; the lustreless parts of the body-feathers grayish brownish black instead of dull black.

Measurements.— Type. Adult ♂ — wing, 143.0; tail, 186.0; tarsus, 35.5; culmen, 27.5.

Male (eight specimens) — wing, 137.0–143.0 (139.4); tail, 177.0–188.0 (184.1); tarsus, 32.0–36.0 (34.6); culmen, 26.5–28.5 (27.3).

Female (ten specimens) — wing, 133.5–142.0 (137.1); tail, 170.5–185.5 (178.8); tarsus, 31.0–35.0 (32.9); culmen, 25.0–27.0 (26.1).

Specimens examined.— *C. s. sulcirostris:* — Texas: Lomita Ranch, 1 ♂; Brownsville, 1 ♂, 1 ♀. Mexico: Monterey, 2 ♀ ♀, 1 unsexed; Tamaulipas, 4 ♂ ♂; Escuinapa, 1 ♂, 1 ♀; Plains of Colima, 1 ♀;

Jalapa, 1 ♀, 1 unsexed; Orizaba, 2 ♀ ♀; Quintana Roo, 1 ♂; Tehuantepec, 1 ♂; Yucatan, 1 ♂, 1 ♀, 2 unsexed. British Honduras: Belize, 1 ♂. Honduras: Yaruca, 1 ♂, 2 ♀ ♀; Ceiba, 1 ♂. Costa Rica: Sipurro, 1 ♂. Colombia: Santa Marta, 2 ♂ ♂. Unspecified, 1 immature. Total, 32.

C. s. pallidula: — Lower California: San José del Cabo, 8 ♂ ♂, 10 ♀ ♀. Total, 18.

Remarks.— Eighteen adults of this new form, laid out beside a series of nearly double that number from various points in Mexico and Central America, are strikingly different; the pale, dull colors of the Lower Californian bird cannot be matched by any specimen in our series of true *sulcirostris*. The difference is noticeable at a glance but rather difficult to describe. Brewster (Bull. M. C. Z., 1902, **40**, p. 100), in his account of the birds of the Cape Region of Lower California, states that the Groove-billed Ani is not known to occur in central and northern Lower California, and that the colonies which have become established in the Cape region were probably originated by birds which came from western Mexico. However this may be, the isolated colony of Cape St. Lucas has developed into a very distinct form, worthy of recognition.

THE FORMS OF DENDROPLEX PICUS (GMELIN).

Having discovered in the Lafresnaye collection the type of *Dendrocolaptes altirostris* Léotaud, we have examined all the specimens of *Dendroplex picus* in the M. C. Z., and have come to the conclusion that there are five forms, Léotaud's bird being the Trinidad representative of the species. The material examined includes specimens from Santa Marta (Colombia), Margarita Island, Trinidad, Guiana, Upper Amazon, and eastern and southeastern Brazil.

In general, immature birds of all forms have smaller, more blackish bills than do adults, and old skins which have been preserved in cabinets for a long time are sometimes more rufous in appearance than fresh specimens. These facts should be borne in mind in making comparisons.

Following is a brief summary of the six forms recognized:—

1. Dendroplex picus picus (Gmelin).

Oriolus picus Gmelin, Syst. nat., 1788, **1**, p. 384 ("Habitat in Gujanae arboribus"— based on Daubenton's, Pl. enl., 605 Cayenne).

SUBSPECIFIC CHARACTERS.— Under parts dark, more olive — not far from Saccardo's umber of Ridgway; upper back similar to under parts, but slightly more rufous; lower back, wings, and tail rufous-chestnut; the pale spots of the under parts small and less distinct on the belly.

MEASUREMENTS.— Adult (twelve specimens) — wing, 93.0–99.5 (96.7); tail, 70.0–79.5 (74.9); tarsus, 19.5–21.5 (20.7); culmen from base of forehead, 27.0–30.5 (29.0).

RANGE.— Guiana, eastern Venezuela (Orinoco Valley), northern Brazil (Rio Negro, Rio Branco).

SPECIMENS EXAMINED.— Dutch Guiana: Vicinity of Paramaribo, 13; "Surinam" (Cragin), 1. British Guiana: Aunai (Whitely), 1. Total, 15.

REMARKS.— Unfortunately we have not seen specimens from the type-locality, Cayenne, but we assume that Surinam birds are sufficiently close for purposes of comparison. Menegaux and Hellmayr (Mém. Soc. hist. nat. Autun, 1906, **19**, p. 109) give measurements of a male and female from Cayenne which are slightly larger than the birds from Surinam listed by them and those examined by us. The difference, however, is very slight and probably would not prove to be constant in larger series.

A male (Penard collection) from Aunai, British Guiana, collected by Henry Whitely, 14 March, 1890 (or 1891), is very rufous, and resembles specimens from Bahia, but in this case we think the rufous tone is due to fading and not to individual or seasonal variation. Specimens taken near Paramaribo in March do not differ in shade from others taken in January, February, April, May, June, or December, all having the dark olive tone. On the other hand, a very old specimen (M. C. Z. 84,580) collected by Cragin in Surinam, has not faded appreciably and agrees very well with more recently collected specimens from the same locality.

2. DENDROPLEX PICUS ALTIROSTRIS (Léotaud).

Dendrocolaptes altirostris Léotaud, Ois. Trin., 1866, p. 166 (Trinidad).

TYPE.— M. C. Z. 77,156, Lafr. coll. 2,279. Adult ♀.

SUBSPECIFIC CHARACTERS.— Similar to *Dendroplex picus picus* Gmelin, but slightly larger; spots on under parts larger and more distinct, especially on the belly; bill very much larger, thicker, and heavier; culmen more curved.

MEASUREMENTS.— TYPE. Adult ♀ — wing, 108.0; tail, 85.5; tarsus, 21.5; culmen from base of forehead, 32.5.

M. C. Z. 84,578, Lafr. coll. 8,490. Adult — wing, 111.0; tail, 83.5; tarsus, 24.0; culmen from base of forehead, 35.5.

RANGE.— Trinidad.

SPECIMENS EXAMINED.— Trinidad: 1 adult and 1 immature; unspecified, 1. Total, 3.

REMARKS.— In his work on the birds of Trinidad, Léotaud (*loc. cit.*) described a new Woodhewer under the name *Dendrocolaptes altirostris*, stating that the validity of the species had been confirmed by Lafresnaye to whom the type had been sent. Lafresnaye was to have returned it to Léotaud, but owing to the Baron's death this had never been done. Léotaud (*loc. cit.*, p. 167) says:

"*L'altirostris* comme le *picus* se tient parmi les mangliers. Il parait être très rare ici, car je n'ai jamais pu obtenir qu'un seul exemplaire. Je l'ai envoyé à M. de Lafresnaye qui daignait alors m'accorder pour mon travail son concours aussi bienvieillant qu'éclairé. Il devait, à mon prière, me renvoyer l'exemplaire quand la mort l'a surpris: mon *altirostris* fait donc partie jusqu'aujourd'hui de la collection qu'a laissée le Baron."

Chapman did not meet with the species while in Trinidad, but on the strength of Lafresnaye's opinion, as cited by Léotaud, included it under the name *Dendrocolaptes altirostris* in his list of the birds of Trinidad (*Cf.* Bull. Amer. mus. nat. hist., 1894, **6**, p. 48). On the other hand Hellmayr (Nov. zool., 1906, **13**, p. 59) disposes of the name in the hypothetical list at the end of his paper on the birds of Trinidad, giving his reasons for so doing.

The type, which is easily identified from Léotaud's description, has two labels — one in a handwriting we take to be Léotaud's, bearing simply the words "*Xiphorynchus altirostris*, femelle," and the other made out by Lafresnaye reading, "il ne diffère du *picus* que par sa mand. plus arquée et par ses plumes écailleuses ventrales plus grandes et plus prolonguées vers l'anus."

The second specimen, M. C. Z. 77,155, Lafr. coll. 2,280, apparently had also been sent to Lafresnaye by Léotaud. It also has two labels — the first on paper exactly like that of the type, and in the same handwriting, bearing the words, "*Dendroplex nigrirostris?* organes sexuels atrophiés," and the second made out by Lafresnaye, reading, "*Dendroplex picus* ♀ ? rostro et ales brevioribus Trinidad." This specimen is obviously an immature bird, with blackish bill, the culmen less curved than in the type of *altirostris*, but much heavier than in true *picus* of Guiana. The spotting of the under parts is less pronounced than in the adult, but decidedly more so than in true *picus*.

A third specimen, M. C. Z. 84,578, Lafr. coll. 8,490, the original label of which is missing, apparently also belongs to this race. It has the characteristic heavy bill, is even larger than the type of *altirostris*, and the under parts are spotted well down the lower belly. It cannot be an example of *D. p. kienerii*, which is also large, because it entirely lacks the deep cinnamon-rufous tone of that form.

3. Dendroplex picus kienerii (Des Murs).

Dendrornis kienerii Des Murs in Castelnau, Voy. Ois., 1856, p. 45, pl. 14, fig. 1 (Ega, Rio Solimoëns).

Type.— Paris Museum, *fide* Menegaux and Hellmayr.

Subspecific characters.— Similar to *Dendroplex picus picus* Gmelin, but larger, and more cinnamon-rufous above and below.

Measurements.— Im.— wing, 106.0; tail, 81.0; tarsus, 22.0; culmen from base of forehead, 27.5.

Range.— Central and western Brazil, eastern Bolivia, eastern Peru.

Specimen examined.— Upper Amazon: one immature bird, Lafr. coll. 2,281, "haut amaz."

Remarks.— Although our specimen is an immature bird with blackish bill, its large size and darker, richer color, distinguish it at once from true *picus*.

4. Dendroplex picus bahiae, subsp. nov.

Type.— M. C. Z. 73,792. Bahia (trade skin).

Subspecific characters.— Similar to *Dendroplex picus picus* Gmelin, but paler and more rufous, less olivaceous throughout; spotting on head larger and more conspicuous, and whiter, less buffy.

Measurements.— Type. Adult — wing, 100.00; tail, 79.5; tarsus, 20.0; culmen from base of forehead, 32.0.

Adult (six specimens)— wing, 100.0–104.0 (101.5); tail, 79.5–85.0 (81.6); tarsus, 18.5–21.0 (20.0); culmen from base of forehead, 28.0–32.0 (30.1).

Range.— Eastern Brazil.

Specimens examined.— Eastern Brazil: Bahia (trade skins), 3; Ceará (trade skin), 1; Boã Vista (Schwanda), 3; Rio de Janeiro, 1. Total, 8.

REMARKS.— Very likely the rufous appearance of the old Bahia skins is in part due to the age of the specimens, but we do not think it is wholly so. Three birds from Boã Vista (Penard coll.), collected by Schwanda in 1907, are of a deeper rufous shade, probably because they are much fresher. None has the olivaceous tone of the Guiana specimens. Perhaps birds from eastern Brazil average slightly larger than *D. p. picus*, as our measurements indicate, but our series is much too small to substantiate this.

5. DENDROPLEX PICUS PICIROSTRIS (Lafresnaye).

Dendrocolaptes picirostris Lafresnaye, Rev. zool., 1847, p. 76 (Colombia: Rio Hacha).

COTYPE.— M. C. Z. 77,106, Lafr. coll. 2,283. Cotype.— Acad. nat. sci. Philadelphia, 6,979.

SUBSPECIFIC CHARACTERS.— Paler than *Dendroplex picus picus* Gmelin, back more chestnut-rufous, less olivaceous; throat white, without any, or with very little, dusky edges to the feathers; superciliary stripe fairly well marked; bill stouter.

MEASUREMENTS.— COTYPE.—Adult —wing, 104.0; tail, 80.0; tarsus, 22.0; culmen from base of forehead, 32.0.

Adult (six specimens) — wing, 96.0–104.0 (100.3); tail, 80.0–85.0 (82.0); tarsus, 22.0–22.5 (22.1); culmen from base of forehead, 29.0–32.0 (30.7).

RANGE.— Central and western Venezuela, Colombia.

SPECIMENS EXAMINED.— Colombia: Rio Hacha, 3 ad., including the type; near Santa Marta, 2 ♂♂, 1 ♀; no locality, 1. Total, 7.

REMARKS.— Cherrie (Mus. Brooklyn inst. Sci. bull., 1916, **2**, p. 268) records specimens of both *D. picus* and *D. picirostris* taken at Ciudad Bolivar. He observes that on his previous expeditions he had not met with *picus* until he reached Perico.

D. picus and *D. picirostris* are two very different looking birds, and intermediate forms are not known to exist. The occurrence of both at Ciudad Bolivar seems to indicate that they are distinct species, and they have been so considered for a long time. Chapman (Bull. Amer. mus. nat. hist., 1917, **36**, p. 422), however, treats *picirostris* as a subspecies of *picus*. This view is in accordance with the principles announced by him in his remarks on the treatment of subspecies (Chapman, *loc. cit.*, p. 175–179). He also met with *picus* in the

Bogotá region from where it had never been reported before and where he also found *picirostris*.

Although we follow Chapman in treating *D. picirostris* as a race of *D. picus*, we strongly suspect that the two are specifically distinct.

Stone (Proc. Acad. nat. sci. Phila., 1899, p. 51) lists a specimen as the type of *D. picirostris*, acquired by the Philadelphia Academy in the Delatre collection. The label of this specimen bears the locality N. Grenada, but does not specifically refer to the type-locality, Rio Hacha, mentioned in the original publication. In the Lafresnaye collection there are three specimens all marked as having come from Rio Hacha. One specimen in particular also refers to Delatre, its label reading as follows: "*Dendroplex picirostris* nob. rev. 1847, p. 76, N^{lle} Grenada (Rio hacha delatr.)". This specimen, we think, has at least as good a claim to being the type as the one in the Philadelphia Academy's collection. We therefore consider them both cotypes.

6. DENDROPLEX PICUS LONGIROSTRIS Richmond.

Dendroplex longirostris Richmond, Proc. U. S. N. M., 1896, **13**, p. 674 (Margarita Island).

TYPE.— U. S. N. M.

SUBSPECIFIC CHARACTERS.— Similar to *Dendroplex picus picirostris* (Lafresnaye), and of about the same size, but bill longer and heavier, and tail shorter; feathers of throat whiter, without dark edges, and extending more over chest; the pale centers of feathers of lower breast broader.

MEASUREMENTS.— Adult (two specimens) — wing, 100.0–102.0 (101); tail, 76.0–79.0 (77.5); tarsus, 22.0–23.0 (22.5); culmen from base of forehead, 33.0–35.5 (34.3).

RANGE.— Island of Margarita.

SPECIMENS EXAMINED.— Two adult males from the type-locality.

REMARKS.— If it should eventually be shown that *D. picirostris* is a distinct species, then *D. longirostris* ought to be considered a subspecies of it rather than of *D. picus*.

THE IDENTITY OF TODIROSTRUM SPICIFERUM LAFRESNAYE.

In the catalogue of the Lafresnaye collection, compiled by Verreaux, two specimens, 4,632 and 4,633, are listed as types of *Todirostrum spiciferum* Lafresnaye (Rev. zool., 1846, p. 363, "hab. in Brasilia"—

Rio Negro, ex Berlepsch). Both specimens are now in the M. C. Z. The first of these we identify as the bird generally known as *Lophotriccus spiciferus* (Lafresnaye), and the second the bird named *Motacilla galeatus* Boddaert (Tabl. Pl. enl., 1783, p. 24 — Cayenne, ex Daubenton's Pl. enl. 391, fig. 1).

The original labels, however, reveal the fact that the second specimen only is the type of Lafresnaye's *Todirostrum spiciferum.* The label of this specimen, in Lafresnaye's handwriting, reads, "Tod. spicifer, T. porte épi nob.," and refers to the original publication. The description agrees perfectly with the specimen, which proves to be *Colopteryx galeatus* (Bodd.). Hellmayr (Abh. K. Bayer. akad. wiss., 1912, **26**, abh. 2, p. 22, footnote) was the first to notice the discrepancy between the diagnosis of *T. spiciferum* and the Upper Amazonian bird to which the name *Lophotriccus spiciferus* has been applied by authors, and with his customary keenness suspected its identity. Compared with fresh specimens from Surinam (Penard collection), Lafresnaye's type is very similar, except that the bill is now of a horn color, and the coloration, in general, has a rather faded and slightly more brownish appearance, which, of course, is readily accounted for by the age of the specimen. Thus the name *Todirostrum spiciferum* Lafresnaye sinks into the synonymy of *Colopteryx galeatus* (Boddaert).

By this unfortunate disposition of *T. spiciferum,* the genera Colopteryx and Lophotriccus are both seriously affected. Lophotriccus was proposed, without designation of type, by Berlepsch (Proc. Zool. soc. London, 1883 [= 1884] p. 553), who listed as representative species *L. spicifer* (Lafr.) and *L. squamicristatus* (Lafr.). The genotype was subsequently designated by Sclater (Cat. birds Brit. mus., 1888, **14**, p. 86), who selected *Lophotriccus spicifer* Lafresnaye. Lophotriccus is thus a synonym of Colopterus Cabanis. The latter being preoccupied, Ridgway (Proc. U. S. N. M., 1888, **10**, p. 519) has substituted Colopteryx, by which name the genus has been known ever since. But Colopteryx is antedated by Lophotriccus and must be replaced by it. The only species in the genus should thus be called *Lophotriccus galeatus* (Boddaert).

The genus erroneously known as Lophotriccus is now without a name, since Orchilus Cabanis, which would otherwise be applicable here, is preoccupied by Orchilus Morris (*Cf.* Oberholser, Proc. Biol. soc. Wash., 1918, **31**, p. 203), and since Orcheilus Gray is merely an emendation. We therefore propose for this genus

COMETORNIS, gen. nov.

TYPE.— *Todirostrum squamaecrista* Lafresnaye, Rev. zool., 1846, p. 363.

GENERIC CHARACTERS.— (See Ridgway, Bull. 50, U. S. N. M., 1907, pt. 4, p. 369, under Lophotriccus).

The specimen, Lafr. coll. 4,632, listed by Verreaux as one of the types of *T. spiciferum*, has a label, in Verreaux's handwriting, and is marked as having come from Peru instead of Brazil. This specimen does not agree with the description, and there is nothing to support Verreaux's statement that it is a type. It is, however, the bird to which the name *spiciferum* has been erroneously applied by authors. We propose to call it

COMETORNIS VITIOSUS, sp. nov.

TYPE.— M. C. Z. 77,348, Lafr. coll. 4,632. "Perou" (Verreaux).

SPECIFIC CHARACTERS.— Differs from other species in this genus in having the elongated crest-feathers edged with whitish instead of cinnamon or cinnamon-rufous.

DESCRIPTION OF TYPE.— Top of head blackish, the elongated crest-feathers edged with whitish; upper parts olive-green, wings and tail dusky, margined with olive; wing-coverts and outer secondaries broadly tipped and edged with yellowish green; under parts grayish, slightly striped, breast with dusky markings; lower belly, sides and under tail-coverts pale greenish yellow.

MEASUREMENTS.— TYPE. Adult — wing, 51.0; tail, 37.5; tarsus, 15.0; exposed culmen, 11.0.

REMARKS.— We would have preferred a freshly collected specimen for the type, rather than the old Lafresnaye specimen, but we have no other. Fortunately it is in a good state of preservation.

The species and subspecies of the new genus are: —

COMETORNIS SQUAMAECRISTA SQUAMAECRISTA (Lafresnaye).

Todirostrum squamaecrista Lafresnaye, Rev. zool., 1846, p. 363 (Bogotá). TYPE.— M. C. Z.

COMETORNIS SQUAMAECRISTA PILEATUS (Tschudi).

Euscarthmus pileatus Tschudi, Archiv naturg., 1844, **10**, bd. 1, heft. 3, p. 273 (Peru). TYPE.— Neufchâtel Museum (?).

COMETORNIS SQUAMAECRISTA MINOR (Cherrie).

Lophotriccus squamicristatus minor Cherrie, Proc. U. S. N. M., 1891, **14**, p. 337 (Grecia, Costa Rica). TYPE.— U. S. N. M.

COMETORNIS SQUAMAECRISTA HYPOCHLORUS (Berlepsch and Stolzmann).

Lophotriccus squamicristatus hypochlorus Berlepsch and Stolzmann, Ornis, 1906, **13**, p. 85 (Santa Ana, Central Peru). TYPE.— Branicki collection.

COMETORNIS SQUAMAECRISTA MACCONNELLI (Chubb).

Lophotriccus macconnelli Chubb, Bull. Brit. orn. club, 1919, **39**, p. 90 (Ituribisi Riv., British Guiana). TYPE.— McConnell collection.

Not seen.

COMETORNIS VITIOSUS Bangs and Penard.

A NEW SUBSPECIES OF MYIOZETETES CAYANENSIS (LINNÉ).

In comparing a topotypical series of the Cayenne Flycatcher with a large series of specimens from Panama, we find that the latter represent a distinct subspecies, worthy of recognition, and propose to name it

MYIOZETETES CAYANENSIS HARTERTI, subsp. nov.

TYPE.— M. C. Z. 107,203. Adult ♀. Panama: Loma del Leon, 25 March, 1900. W. W. Brown, Jr.

SUBSPECIFIC CHARACTERS.— Similar to *Myiozetetes cayanensis cayanensis* (Linné) of Guiana, but slightly smaller; color of upper parts paler and more brownish, not so richly olivaceous.

MEASUREMENTS.—

Myiozetetes cayanensis cayanensis.

	Locality	Sex	Wing	Tail	Tarsus	Exposed culmen
Penard coll. 232	Surinam	♂	91.0	68.5	18.3	13.0
" " 233	"	♂	88.5	70.3	19.5	12.5
" " 989	"	♂	88.0	67.5	19.5	13.5
" " 234	"	(♀)	84.5	66.5	18.0	12.0
" " 990	"	(♀)	85.5	68.5	18.5	13.0

Myiozetetes cayanensis erythropterus.

	Locality	Sex	Wing	Tail	Tarsus	Exposed culmen
M. C. Z. 83,362, Lafr. coll. 4,761 (cotype)	Brazil	—	95.0	78.0	20.5	—
M. C. Z. 83,363, Lafr. coll. 4,762 (cotype)	Brazil	—	95.0	78.0	19.0	12.0

Myiozetetes cayanensis hellmayri.

	Locality	Sex	Wing	Tail	Tarsus	Exposed culmen
M. C. Z. 124,688	W. Col.: Jimenez	♂	94.0	—	19.0	12.5
“ 124,685	“ “ “	♂	88.3	69.0	19.5	13.5
“ 124,686	“ “ “	♂	90.0	70.5	17.5	12.5
“ 124,683	“ “ Rio Cauca	♂	91.5	71.0	18.5	13.0
“ 124,689	“ “ Jimenez	♀	85.5	70.0	19.0	12.5
“ 124,690	“ “ “	♀	85.5	70.0	19.0	13.0
“ 124,687	“ “ “	♀	83.0	63.5	18.5	13.0
“ 124,681	“ “ Atuncela	♀	87.0	69.5	18.5	12.5
“ 124,684	“ “ Rio Cauca	♀ (?)	89.5	70.5	—	12.0
Penard coll. 2,005	Ecuador	♀	82.8	68.2	17.8	—

Myiozetetes cayanensis harterti.

	Locality	Sex	Wing	Tail	Tarsus	Exposed culmen
M. C. Z. 107,205	Panama: Loma del Leon	♂	87.0	70.0	18.5	13.0
“ 107,204	“ “ “ “	♂	87.8	70.5	18.0	12.5
“ 40,837	Near Panama R. R.	♂	87.0	70.0	18.5	13.0
Penard coll. 2,006	Panama: Colon	♂	88.2	69.5	17.5	12.0
M. C. Z. 107,202	“ Loma del Leon	♀	83.5	66.5	18.5	12.0
“ 107,203	“ “ “ “	♀	85.5	66.0	18.0	12.3
“ 107,206	“ “ “ “	♀	79.5	63.0	18.0	12.0
“ 107,201	“ “ “ “	(♀)	83.5	66.5	17.0	12.0
“ 114,080	Line of Panama R. R.	♀	79.5	65.3	18.0	12.5
“ 46,309	“ “ “ “	(♀)	82.2	67.0	17.5	12.0
“ 46,308	“ “ “ “	♀ (?)	86.0	69.5	17.0	12.5
“ 27,738	Panama, Aspinwall	(♀)	82.0	64.5	17.2	12.0

REMARKS.— In his revision of Spix's types, Hellmayr (Abh. K. Bayer. akad. wiss., 1906, **22**, abt. 3, p. 649) gave a review of the forms of the Cayenne Flycatcher, of which he distinguished three:—

M. C. CAYANENSIS (Linné).

Muscicapa cayanensis Linné, Syst. nat., 1766, **1**, p. 327 (“Cayana”).

Guiana, "Orinoko-Delta," Bogotá, Pará, Matto Grosso, and W. Ecuador.

M. C. RUFIPENNIS Lawrence.

Myiozetetes rufipennis Lawrence, Ann. Lyc. nat. hist., N. Y., 1869, **9**, p. 267 (Valencia, Venezuela). Type — American Museum of Natural History.

Venezuela.

M. C. ERYTHROPTERUS (Lafresnaye).

Tyrannula erythroptera Lafresnaye, Rev. zool., 1853, p. 56 (Brazil). Cotypes — M. C. Z.

S. Brazil and Minas Geraës.

The bird from W. Ecuador he thought might represent another form.

Ridgway (Bull. 50, U. S. N. M., 1907, pt. 4, p. 443) did not consider *M. c. rufipennis* a distinct subspecies, and placed the name in the synonymy of *M. c. cayanensis*. Later writers, including Hellmayr, have not followed this view, but have recognized *rufipennis*.

Recently Hartert and Goodson (Nov. zool., 1917, **24**, p. 412) have separated the West Ecuadorian form concerning which Hellmayr had expressed a doubt, naming it *M. c. hellmayri*, type-locality Cachabé, N. W. Ecuador. They also called attention to the slightly smaller size and grayer coloration of birds from Panama, but owing to lack of material did not come to a decision in regard to these.

MUSCIFUR, gen. nov.

TYPE.— *Myiarchus semirufus* Sclater and Salvin, Proc. Zool. soc. London, 1878, p. 138, pl. 11.

GENERIC CHARACTERS. — Superficially resembling Myiarchus Cabanis. Bill flat as in the subgenus Onychopterus Reichenbach, not deep as in true Myiarchus; lateral edges decidedly convex, not straight. Wing rounded, not pointed; third (from outside), fourth, and fifth primaries longest; second about equal to sixth; first decidedly short, shorter than ninth; distance from longest primary to distal secondaries not more than length of middle toe without claw. Tail rounded, about equal to length of wing. Upper parts brownish olive, like the head; wings and tail rufous or with rufous edgings; lower parts uniform rufous, entirely lacking the characteristic gray breast and yellow belly of Myiarchus.

The only species contained in the new genus is *Muscifur semirufus* (Sclater and Salvin).

Remarks.— Berlepsch (Proc. Intern. orn. congress, 1907, p. 478) also has called attention to the fact that *M. semirufus* did not belong in Myiarchus.

THE FORMS OF TYRANNUS MELANCHOLICUS VIEILLOT.

This wide-ranging species inhabits a vast area from the Lower Rio Grande in Texas, south to Argentina, and throughout its range is locally common. According to Chapman (Bull. Amer. mus. nat. hist., 1917, **36**, p. 478) it is in the main a bird of the tropical zone, but apparently follows the trails and clearings up into the mountains, being found even on the Bogotá Savanna at an altitude of 8,750 feet.

The species varies very little, especially within its South American range. One of the distinguishing characters usually ascribed to birds from northern South America, is the paler color of the back, but we find this very unreliable. In freshly moulted birds from all parts of the range of the species, the upper parts are olive greenish, while in birds in worn, post-breeding plumage, the back is often faded to a dull gray color with practically no olive tone. On the whole, however, birds from southern South America, true *T. m. melancholicus*, are a trifle darker than those from northern South America.

We have been confronted by the usual unreliability in regard to sex determinations in species the males and females of which are similarly colored; for if, as is generally supposed, the male of this species is larger than the female, many of the specimens have been wrongly sexed by collectors. After examining much material, we have decided to ignore the sex marks on the labels altogether, although disposed to regard the smaller specimens of each form as females.

In comparing a very large number of specimens from various parts of Central and South America, we distinguish five forms, of which the characters and geographical distribution are as follows: —

1. Tyrannus melancholicus melancholicus Vieillot.

Tyrannus melancholicus Vieillot, Nouv. dict., 1819, **35**, p. 84 (Paraguay).
Type.— ? Mus. hist. nat. Paris.

Subspecific characters.— A large form. Chest-band wide and rather dark, suffused more with gray than with yellow; head dark gray; throat gray, not white.

Measurements. — Adult (thirty-one specimens) — wing, 112.0–122.5 (116.9); tail, 90.0–108 (96.4).

Range.— Argentina, Uruguay, Paraguay, southern Brazil, Bolivia, Peru, western Ecuador, Colombia (excepting Santa Marta region).

Specimens examined.— Argentina: Tucuman (Tapia), 1; Arenal, 1. Uruguay: Concepcion del Uruguay, 1. Southern Brazil: State of Paraná, 2; State of São Paolo, 6. Bolivia: Yungas, 1. Western Ecuador: San José, 1; San Juan, 1. Peru: Lake Titicaca, 1; Bellavista, 1; Tabacónas, 2; Huancabamba, 3; Chanchamaga, 2. Colombia: Bogotá, 1; Jimenez, 6; Atuncela, 1; San Antonio, 1. Total, 32.

Remarks.— There has been much uncertainty in regard to the range of true *melancholicus*. We refer to this form all birds from Argentina and Uruguay northward to western Colombia and to South Brazil. Birds from western Colombia and western Ecuador are, as a matter of fact, intermediate in coloration, between true *melancholicus* and the form inhabiting northern South America. Like true *melancholicus* they possess the wide chest-band, which, however, is slightly more yellowish in tone, not so grayish. On the whole, they are very close to true *melancholicus* and hardly distinguishable in parallel series. The difference is certainly too small to warrant further subdivision.

2. TYRANNUS MELANCHOLICUS DESPOTES (Lichtenstein).

Muscicapa despotes Lichtenstein, Verz. doubl., 1823, p. 55 (Bahia, Brazil). Type.— Berlin Museum.

(?) *Muscicapa furcata* Spix, Av. Bras., 1825, **2**, p. 15, pl. 19 ("in locis campestribus Brasiliae"). Type.— Munich Museum.

(?) *Tyrannus crudelis* Swainson, Quart. journ. sci., 1826, **20**, p. 275 (Brazil) [Reference not verified].

Tyrannus melancholicus satrapa (not *Laphyctes satrapa* Cabanis and Heine) of authors.

Subspecific characters.— Similar to *Tyrannus melancholicus melancholicus* Vieill., but smaller; chest-band much narrower, yellowish rather than grayish predominating; throat paler gray.

Measurements.— Adult (fifteen specimens) — wing, 106.0–117.0 (109.8); tail, 84.0–98.5 (90.4).

Range.— Eastern Brazil, Guiana, Venezuela, Trinidad, Tobago, Grenadines.

Specimens examined.— Eastern Brazil: Bahia, 3. Dutch Guiana: near Paramaribo, 6. French Guiana (trade skin), 1. British Guiana:

Bartica Grove, 2. Venezuela: Margarita Island, 2. Trinidad, 2. Tobago, 1. Union Island (Grenadines), 1. Total, 18.

REMARKS.— This small form is intermediate in coloration between *T. m. melancholicus* of Paraguay and *T. m. chloronotus* of Yucatan. Within its range from Bahia to Merida, Venezuela, we are able to detect some geographical variation, but this is so slight that it would serve no good purpose to recognize more than one form. Birds from Bahia, of which we have unfortunately seen only three specimens, are not quite so distinctive as birds from northern South America, but they are certainly much closer to the latter than to true *melancholicus*. Our examples from Bahia are small like those from Guiana, but the chest-band, although distinctly more yellowish than grayish, is somewhat wider. Since there is already a name available for the Bahia bird, we prefer to adopt it for the entire series rather than to propose a new one for the more distinctive northern birds.

We refer birds from Trinidad, Tobago, Margarita Island, and Union Island, to this form, although they seem to be intermediate between birds from Guiana and Central America. In our examples from the islands mentioned the chest-band is like that of the Guiana birds, but the throat is a trifle more whitish. We cannot, however, justify a further subdivision based upon such a very slight difference, even should it eventually prove to be constant.

In describing *Laphyctes satrapa*, Cabanis and Heine (Mus. Hein., 1859, **2**, p. 77), drew the characters entirely from the Mexican bird to which Lichtenstein had given the manuscript name *satrapa* (Berlin Museum coll.). The only constant character mentioned in the diagnosis, is the larger size, which fixes the name upon the form inhabiting northern Mexico, known as *Tyrannus melancholicus couchii* Baird, and not upon the form inhabiting northern South America, which is even smaller than true *melancholicus*. As Ridgway (Bull. 50, U. S. N. M. 1907, pt. 4, p. 703) remarks, Cabanis and Heine even doubtfully referred the South American specimens, from Guiana and Venezuela, to this form. The type of *Laphyctes satrapa* is thus among the specimens in the Berlin Museum, presumably the same recorded by Lichtenstein as *Tyrannus satrapa* in his Nomenclator Avium Musei zoologici Berolinensis, 1854, p. 16, type-locality Mexico. In accordance with this view *T. m. satrapa* (Cabanis and Heine) becomes a synonym of *T. m. couchii* Baird. We may add that previous to Ridgway, Berlepsch (Proc. Intern. orn. congress, 1907, p. 474) had already called attention to the probable identity of the two names.

The names *Muscicapa furcata* Spix and *Tyrannus crudelis* Swainson, cited in the synonymy above, may apply to this form or perhaps to *T. m. melancholicus,* but as neither Spix nor Swainson gave sufficient information in regard to the type-localities in Brazil, it would be necessary to examine and compare the types in order to determine to which of the two forms these names properly belong. In the plate representing *M. furcata* the chest-band is very wide and dark, more like that of true *melancholicus,* but Hellmayr (Abh. K. Bayer. akad. wiss., 1906, **22**, abt. 3, p. 666) says the type does not differ from a much worn specimen from Paraguay, and that the chest and back are shown much too green in the plate.

3. TYRANNUS MELANCHOLICUS CHLORONOTUS Berlepsch.

Tyrannus chloronotus Berlepsch, Proc. Int. orn. congress, 1907, p. 474 (Temax, Yucatan). TYPE.— Berlepsch collection.

SUBSPECIFIC CHARACTERS.— Similar to *Tyrannus melancholicus melancholicus* Vieillot and *Tyrannus melancholicus despotes* (Lichtenstein), but chest-band decidedly paler and much more yellowish; head slightly paler gray; throat paler and becoming more whitish towards the chin.

MEASUREMENTS.— Adult (134 specimens) — wing, 101.0–120.5 (112.7); tail, 84.5–102.0 (93.6).

RANGE.— Venezuela (Merida), Colombia (Santa Marta region), Panama, Costa Rica, Nicaragua, Honduras, Guatemala, British Honduras, southeastern Mexico.

SPECIMENS EXAMINED.— Venezuela: Merida, 2. Colombia (Santa Marta region): Santa Marta, 3; Santa Marta Mountains, 1; Santa Cruz, 1; Palomina, 5; Macotama, 2; San Sebastian, 3; La Concepcion, 19. Panama: Savanna, near Panama, 2; Line of Panama Railroad, 2; Loma del Leon, 11; Bogaba, 1; Boquete, 3; David, 4; Divala, 3; Pearl Islands, 42. Costa Rica: San José, 1; Juan Viñas, 1; Bolson, 1; Sipurro, 1; Boruca, 1; Cerro Sta. Maria, 1; Buenos Aires, 1; El General, 1; no exact locality, 3. Nicaragua, 1. Honduras: Ceiba, 7. Guatemala: Virginia plantation, 1; trade skins, 3. British Honduras: Belize, 2: Toledo distr., 1; Mexico: Yucatan, 4; Quintana Roo, 5; Tehuantepec (Chihuitan), 1. Total, 140.

REMARKS.— This form is readily distinguishable by its whitish throat and very much yellower chest-band. In birds from Pearl Islands, Bay of Panama, the belly is, as a rule, of a deeper shade of yellow, sometimes even distinctly orange; but this character is not constant and may be found in some specimens from Panama and elsewhere.

There is a perceptible increase in size of the specimens of this form, northward as it approaches the range of *T. m. couchii.*

4. TYRANNUS MELANCHOLICUS OCCIDENTALIS Hartert and Goodson.

Tyrannus melancholicus occidentalis Hartert and Goodson, Nov. zool., 1917, **24**, p. 412 (San Blas, Tepic, W. Mexico). TYPE.— Tring Museum (?).

SUBSPECIFIC CHARACTERS.— Similar to *Tyrannus melancholicus chloronotus* Berlepsch, but smaller; belly paler yellow than in any other form; throat even clearer white than in *T. m. chloronotus;* tail less deeply forked.

MEASUREMENTS.— Adult (seven specimens) — wing, 109.5–116.0 (112.4); tail, 85.0–92.5 (89.5).

RANGE.— Western Mexico.

SPECIMENS EXAMINED.— Mexico: Ocotlan, 1; Manzanello, 1; San Blas, 3; Tres Marias Islands, 2; Rosario, 1. Total, 8.

REMARKS.— This is a very well-marked form. Its pale under parts and clear white throat distinguish it at once from its nearest allies, *T. m. chloronotus* and *T. m. couchii.*

5. TYRANNUS MELANCHOLICUS COUCHII Baird.

Tyrannus couchii Baird, Rept. Pacific R. R. survey, 1858, **9**, p. 175 (Nuevo Leon, Mexico). TYPE.— U. S. N. M.

Laphyctes satrapa Cabanis and Heine, Mus. Hein., 1859, **2**, p. 77 (Mexico). TYPE.— Berlin Museum.

SUBSPECIFIC CHARACTERS.— Similar in coloration to *Tyrannus melancholicus chloronotus* Berlepsch, but much larger; larger also than *Tyrannus melancholicus melancholicus* Vieillot; chest-band not so dark, throat whiter, and head paler gray.

MEASUREMENTS.— Adult (twelve specimens) — wing, 116.0–125.5 (122.1); tail, 93.5–104.5 (98.8).

RANGE.— Northeastern Mexico, southern Texas.

SPECIMENS EXAMINED.— Mexico: Tamaulipas, 6; Sierra Madre, 1; Jalapa (trade skin), 1; Orizaba, 1. Texas: Lomita Ranch, 3; Brownsville, 1. Total, 13.

REMARKS.— This is the largest of the forms of *T. melancholicus.*

The largest examples occur in the northern parts of its range, in Texas and Northeast Mexico, and from there southward the form gradually merges into *T. m. chloronotus.*

In freshly moulted birds the back is a little paler olive-green than in true *T. m. melancholicus,* but we cannot detect any differences in the color of wings and tail of the two forms.

THE FORMS OF PACHYRHAMPHUS POLYCHOPTERUS (VIEILLOT) AND PACHYRHAMPHUS MARGINATUS (LICHTENSTEIN).

Having examined nearly all specimens of *Pachyrhamphus polychopterus* and *Pachyrhamphus marginatus* available in this country, we are able to throw some light on the geographical forms of these two closely related species.

Males of the paler forms of *P. polychopterus* superficially resemble males of *P. marginatus,* but they are really quite distinct and readily identifiable. The male of the *P. marginatus* group differs from that of the *P. polychopterus* group in having a broad white frontal band, although some specimens of the *polychopterus* group, especially in the paler forms, possess distinct white lores.

The females of the two species are distinguishable at a glance. In the *P. polychopterus* group the head of the female is of about the same color as the back, or a little darker, while in the *P. marginatus* group the head is always reddish brown, contrasting sharply with the olive-green of the back.

I. THE PACHYRHAMPHUS POLYCHOPTERUS GROUP.

There appears to be considerable confusion among ornithologists in regard to the forms of *Pachyrhamphus polychopterus,* partly, no doubt, owing to lack of material for comparison.

The series of specimens at our disposal, arranged in accordance with the geographical distribution of the species, not only shows very plainly the existence of more forms than have hitherto been recognized, but exhibits in a marked degree the great amount of individual variation in the plumage of the males of the darker forms. Berlepsch (Nov. zool., 1908, **15**, p. 140) and Cherrie (Mus. Brooklyn inst. Sci. bull., 1916, **2**, p. 252), both have called attention to this variation.

The females also show much individual variation. The color of the upper parts varies from brownish olive to grayish green, with all intermediate shades, but that of the under parts is more constant and practically the same in all the forms. In general, females of the paler forms are more yellowish below than those of the darker forms, and young females of all forms have much brighter yellow under parts than do adults.

The species is distributed over the entire forested area of Central and South America from Honduras to northern Argentina, and is represented by eight forms of which two, *P. p. tristis* and *P. p. costaricensis*, are respectively so close to *P. p. variegatus* and *P. p. similis*, that further investigation with larger series for comparison may prove them to be identical with the latter.

The largest form is found in the southernmost portion of the range of the species, while the smallest members inhabit Costa Rica, Nicaragua, and Honduras.

The darkest form is *P. p. variegatus* of the Upper Amazon. Southward and northward from there the species becomes more variable tending toward paler forms, attaining the palest coloration in *P. p. costaricensis* of Costa Rica.

The form inhabiting Guiana, Venezuela, Trinidad, and Tobago, presents the greatest individual variation, from very dark birds, almost the equal of *P. p. variegatus*, to pale birds closely resembling those inhabiting the Santa Marta region in Colombia. But we cannot find any constant characters distinguishing birds from any portion of the range of this form. On the contrary, specimens with mottled under parts, with or without mottled rumps and under tail-coverts, are found over the entire range. Nor can we detect any constant difference in the degree of freckling or paleness of the under parts.

In all the forms the paler specimens show more or less pronounced traces of whitish lores. These are particularly noticeable in young birds, but are never so distinct as in *P. marginatus*, nor do they ever meet at the base of the forehead to form a distinct band as in that species.

The forms are:—

1. PACHYRHAMPHUS POLYCHOPTERUS POLYCHOPTERUS (Vieillot).

Platyrhynchos polychopterus Vieillot, Nouv. dict., 1818, **27**, p. 10 ("Nouvelle-Hollande," error — South Brazil substituted by Hellmayr, Abh. K. Bayer. akad. wiss., 1906, **22**, Abt. 3, p. 666). TYPE.— Paris Museum — *fide* Vieillot, (*loc. cit.*).

Pachyrhamphus notius Brewster and Bangs, Proc. New Eng. zoöl. club, 1901, 2, p. 53 (Concepcion del Uruguay). Type.— M. C. Z.

Clemacocercus cyanocephalus Bertoni, Av. nuev. Paraguay, 1901, p. 327. [Reference not verified].

Subspecific characters.— Large, wing of male not less than 80 millimeters; dark, under parts, in adult, varying from deep mouse-gray (of Ridgway) to blackish, slightly freckled with gray or whitish.

Measurements.— Male (nineteen specimens) wing, 80.0–86.0 (82.0); tail, 61.0–65.5 (62.3); tarsus, 18.0–19.8 (19.1); exposed culmen, 12.0–13.5 (12.8).

Female (five specimens) — wing, 78.0–81.0 (79.6); tail, 57.0–61.0 (59.0); tarsus, 18.0–20.5 (19.1); exposed culmen, 12.5–14.5 (13.1).

Range.— Northern Argentina, Uruguay, Paraguay, Southern Bolivia, and Southern Brazil.

Specimens examined.— Northern Argentina: Macho Muerta, Oran, 2 ♂♂; Embarcacion, Oran, 3 ♂♂, 3 ♀♀; Miraflores, Oran, 5 ♂♂, 1 ♀; La Plata, 1 ♂. Uruguay: Concepcion del Uruguay, 2 ♂♂. Southern Brazil: Rio Janeiro (?), 1 very young bird; Ubatis, S. Paolo, 1 ♂; Rio Grande do Sul, 1 ♂; Chapada, Matto Grosso, 2 ♂♂, 1 ♀; Southern Bolivia: Yacuiba, 2 ♂♂; Rio Yapacani, Sta. Cruz, 1 ♂. Total, 26.

Remarks.— This dark form, closely resembling *P. p. variegatus* in coloration, but perhaps never quite so intensely black below, and with the rump apparently never so black as the back, can always be distinguished from *P. p. variegatus* by its much larger size. Both young and adult are sometimes uniformly colored below and sometimes very much freckled with grayish.

A specimen (Carnegie Museum) from Macho Muerto, Dept. Oran. N. Argentina, has distinct whitish lores, while another (Carnegie Museum) from the same locality, collected in the same year and month, has practically no trace of any. In most specimens, however, a very faint trace of white may be detected in the loral region.

When Brewster and the senior author (*loc. cit.*) separated this large southern form as *Pachyrhamphus notius*, they compared their type with specimens of the pale race inhabiting eastern Brazil, which they regarded as true *polychopterus*, but they did not fix the type-locality of the latter. A few years later Hellmayr (*loc. cit.*), evidently considering the southern Brazilian bird different from true *notius*, applied to it the name *polychopterus* of Spix, designating South Brazil as type-locality. Notwithstanding this formal designation of the type-locality, however, it is not yet certain that the name *polychopterus* properly belongs to the southern bird, because, as Hellmayr and Seilern (Archiv naturg., 1912, abt. A, heft 5, p. 89, footnote) have observed, the type, which is in the Paris Museum, may upon investigation, prove to belong to one of the northern South American forms, in which case *P. notius* Brewster and Bangs becomes available for this form.

If any difference exists between true *notius* and the bird from southern Brazil, it is so slight that we cannot differentiate it from individual variation in the series examined, and hence we are obliged to unite both under one name, provisionally using *Pachyrhamphus polychopterus polychopterus* (Vieillot).

2. PACHYRHAMPHUS POLYCHOPTERUS SPLENDENS (Wied).

Muscipeta splendens Wied, Beitr. naturg. Bras., 1831, **3**, pt. 2, p. 906 (Brazil — we designate Bahia). TYPE.— A. M. N. H.

Pachyrynchus spixii Swainson, Animals in menag., 1838, p. 289 ("Brazil?" — we designate Bahia). TYPE.— Paris Museum — *fide* Swainson (*loc. cit.*).

SUBSPECIFIC CHARACTERS. — Similar to *Pachyrhamphus polychopterus polychopterus* (Vieillot) of South Brazil, but smaller; under parts much paler, never blackish, usually about light neutral gray (of Ridgway) to neutral gray.

MEASUREMENTS.— TYPE.— Adult ♂ — wing, 77.5; tail, 59.0; tarsus, 18.0; exposed culmen, 13.0.

Male (eight specimens including the type) — wing, 75.5–77.5 (76.7); tail, 56.3–59.0 (56.9); tarsus, 17.5–19.0 (18.4); exposed culmen, 11.5–13.1 (12.5).

RANGE.— Eastern Brazil.

SPECIMENS EXAMINED.— Eastern Brazil: Bahia (type and trade skins), 5 ♂♂; Ceará (trade skins), 3 ♂♂; "Bresil" (Lafr. coll. 4,504), 1 ♂. Total, 9.

REMARKS.— In this subspecies the under parts are never so conspicuously freckled as in true *polychopterus* of South Brazil, because the ground color is so much paler. Owing to the presence of small whitish lores in many specimens, we suspect that it has often been confounded with *Pachyrhamphus marginatus marginatus* (Lichtenstein), which inhabits the same general region, but the under parts of *P. p. splendens* are never so pale, and the white frontal band is never present, as in that species.

Having examined the type of Wied's *Muscipeta splendens*, we positively identify it as belonging to the eastern Brazilian form, and hence adopt the name *splendens*. On account of fading the type is somewhat browner than fresh specimens.

We have not seen any authentic examples of the female of this form, but a specimen (A. M. N. H. 43,674) marked "Brazil?," the dimensions of which are too small for *polychopterus* and rather large for *tristis*, may possibly belong to this form. The measurements are: — wing, 75.0; tail, 55.5; tarsus, 18.0; exposed culmen, 13.0.

3. PACHYRHAMPHUS POLYCHOPTERUS VARIEGATUS (Spix).

Pachyrhynchus variegatus Spix, Av. Bras., 1825, **2**, p. 31, pl. 43, fig. 3 (♂ juv.) (No type-locality stated — we designate Upper Amazon, near Fonteboa). TYPE lost — *fide* Hellmayr, Abh. K. Bayer. akad. wiss., 1906, **22**, abt. 3, p. 666.

Pachyrhynchus niger Spix, Av. Bras., 1825, **2**, p. 33, pl. 45, fig. 1 (♂ ad.) (No type-locality stated — "Amazonas prope Fonteboa," designated by Berlepsch and Hartert, Nov. zool., 1902, **9**, p. 56). TYPE lost — *fide* Hellmayr, *loc. cit.*, p. 669.

Pachyrhamphus nigriventris Sclater, Proc. Zool. soc. London, 1857, p. 76 (new name for *Pachyrhynchus niger* Spix).

SUBSPECIFIC CHARACTERS.— Similar to *Pachyrhamphus polychopterus polychopterus* (Vieillot) of South Brazil, but smaller, and even blacker, the adult male having practically unmottled, black rump, under parts and under tail-coverts.

MEASUREMENTS.— Male (two specimens) — wing, 73.0–75.5; tail, 58.5–56.5; tarsus, 18.0–18.5; exposed culmen, 13.0–12.8.

RANGE.— Northern Bolivia, Upper Amazon, northeastern Peru (Hellmayr), eastern Ecuador (Hellmayr).

SPECIMENS EXAMINED.— Northern Bolivia: Lower Beni, 1 ♂ (not typical). Western Brazil: Porto Velho, Rio Madeira, 1 im. ♂. Total, 2.

REMARKS.— It is by no means certain that a large series of specimens from the Upper Amazon would not prove the identity of this small dark form with the next, the darkest specimens of which quite match the only adult male of *P. p. variegatus* (= *niger*) we have seen. For the present, however, we keep the two forms separate, more on the authority of Hellmayr and other investigators, than on the evidence presented by our own specimens. *P. p. variegatus* is the only form of which we have not been able to examine sufficient material.

Hellmayr (*loc. cit.*, p. 666), in his "Revision der Spix'schen typen," doubtfully referred *Pachyrhynchus variegatus* Spix to *Pachyrhynchus polychopterus* (Vieillot), remarking that it might equally well represent the young of *P. niger*. After careful examination of Spix's plate, which certainly represents a young male of the *polychopterus* group, we have decided that it does not represent true *polychopterus* of South Brazil. The wing measurement of approximately 75 mm., taken from the plate, is much too small and more in agreement with that of the males of either the Upper Amazonian or eastern Brazilian forms.

Spix failed to state where he obtained the specimen, but it is reasonable to assume that he procured the young bird at the same place as the adult male figured by him in plate 45 under the name *P. niger*, the type-locality of which has been designated by Berlepsch and Hartert (*loc. cit.*) as "Amazonas prope Fonteboa."

We would have preferred to place the name *variegatus* in the synonymy of some one of the forms of *polychopterus*, rather than use it to replace the time-honored name of *niger*, but in our judgment the evidence will not permit of such a course.

4. PACHYRHAMPHUS POLYCHOPTERUS TRISTIS (Kaup).

?*Lanius atricapillus* Merrem, Av. Icon. descr., 1784, p. 26 (Surinam). *Cf.* Berlepsch, Nov. zool., 1908, **15**, p. 140.

Psaris marginatus tristis Kaup, Proc. Zool. soc. London, 1851, p. 48 (No type-locality stated — we designate Cayenne). TYPE.— Originally in collection of Lord Derby.

Pachyrhamphus niger tobagensis Cory, Field mus. nat. hist. Publ. 190, orn. ser., 1916, **1**, no. 10, p. 343 (Tobago Island, West Indies). TYPE.— Field Museum of Natural History.

Pachyrhamphus macconnelli Chubb, Bull. Brit. orn. club, 1920, **40**, p. 73 (Bonasika River, British Guiana). TYPE— McConnell collection.

Pachyrhamphus albiloris Chubb, Bull. Brit. orn. club, 1920, **40**, p. 73 (San Estaban, Venezuela). TYPE.— British Museum, Sclater collection.

SUBSPECIFIC CHARACTERS.— Similar to *Pachyrhamphus polychopterus variegatus* (Spix) of Upper Amazon (if at all distinguishable), and of about the same size, but under parts slightly paler, not so intensely black (See remarks below on individual variation in this form).

MEASUREMENTS.— Male (fifty-five specimens) — wing, 71.0–77.5 (74.8); tail, 52.5–60.5 (55.6); tarsus, 17.2–19.0 (18.3); exposed culmen, 12.0–14.0 (12.8).

Female (thirty-one specimens) — wing, 68.0–73.5 (71.1); tail, 50.0–56.0 (52.7); tarsus, 17.5–19.0 (18.3); exposed culmen, 12.0–13.0 (12.4).

RANGE.— Guiana (French, Dutch, British). Venezuela, Trinidad, Tobago.

SPECIMENS EXAMINED.— French Guiana: Cayenne (including trade skins), 7 ♂♂, 4 ♀♀; Mana, 8 ♂♂, 5 ♀♀. Dutch Guiana: Vicinity of Paramaribo, 1 ♂. British Guiana: Mount Roraima, 1 ♂; "Demerara," 1 ♂, 1 ♀. Venezuela: Eldorado, Rio Cuyuni, 1 ♂; Rio Yuruan, 1 ♀; San Antonio, Bermudez, 1 ♂; Cumanacoa, Bermudez, 1 ♂, 1 ♀; El Pilar, 1 ♂; Las Quigas, 1 ♂, 2 ♀♀; San Estaban, 1 ♂, 1 ♀; Aroa, Bolivar R. R., 1 ♀; Lagunita de Aroa, 2 ♂♂, 1 ♀; Sierra de Carabobo, 13 ♂♂, 6 ♀♀; El Trompillo, Carabobo, 8 ♂♂, 2 ♀♀; Merida, 2 ♂♂; "Venezuela," 1 ♂, 2 ♀♀. Trinidad: Provincetown, 1 ♂, 3 ♀♀; Heights of Aripo, 1 ♂, 1 ♀; Heights of Orepouche, 1 ♂, 1 ♀; Sta. Emilia, 1 ♀; "Trinidad," 2 ♂♂. Tobago: 2 ♂♂, 1 ♀. Total, 91.

REMARKS.— This is the most variable of all the forms of *P. polychopterus*, and a study of its various plumages is extremely interesting, especially in relation to allied forms.

There is good reason to believe that the species, and more particularly this subspecies, is dichromatic, presenting a black-bellied phase and a gray-bellied phase, both with or without mottled rump, under parts, or under tail-coverts. In the dark phase some specimens are very much like *P. p. variegatus*, the rump being quite black like the back. In the gray phase the bird closely resembles the Santa Marta form, from which it differs in being smaller, slightly darker, and, as a rule, much more mottled.

Two immature birds from Trinidad (A. M. N. H. 59,252, 59,253) are of interest in this connection, in that they are changing directly from the olivaceous plumage of the young bird into the very black of the adult, although several fully adult birds, from the same place, that have passed wholly through the change, have gray, not black, under parts. On the other hand an immature bird from Aroa, Bolivar R. R., Venezuela, and another from Sierra de Carabobo, Venezuela (Carnegie mus., 36,344 and 47,768), are apparently changing directly from the olivaceous into the gray, not black, phase, while from the same general region we have black as well as gray-bellied adults.

Birds from Guiana are, as a rule, larger than birds from Venezuela, but the difference is very slight and not by any means constant.

A few words in regard to the nomenclature and synonymy of this interesting form are necessary here.

The name *Pachyrhamphus atricapillus*, based on *Lanius atricapillus* Merrem, was formerly used by authors for the species now known as *Pachyrhamphus marginatus* (Licht.), but Merrem's description being considered unidentifiable and unsatisfactory, the name *atricapillus* was discarded by Berlepsch (*loc. cit.*). We have not been able to consult the original reference, and hence rely entirely upon the judgment of Berlepsch who abandoned the name and suggested that it might possibly apply to some form of the *polychopterus* group. Since the type-locality of Merrem's *L. atricapillus* is Surinam, it follows that if the name should eventually be considered valid for this species it would not only be applicable to this form but, being the earliest name, would have to be used as the specific term in the names of all other forms.

The name *P. m. tristis* Kaup unquestionably belongs in the *polychopterus* group. The description, "all under parts dark grey, mixed with black" can apply to only two forms — *P. p. polychopterus* and this, all others, except *P. p. variegatus*, which is uniform black, having pale under parts without any admixture of black, although some specimens may have slightly freckled under parts. But the wing measurement of 75 mm., given by Kaup for an adult male, does not agree with that of the southern Brazilian bird, in which the wing measurement of the male is at least 80 mm. Thus by elimination the name is found to apply to the form inhabiting Guiana, Venezuela, Trinidad, and Tobago, which we consider all one, and since no type-locality was mentioned by Kaup, we designate Cayenne and adopt the name *tristis* for this form.

In our opinion, the names *P. n. tobagensis* Cory, *P. macconnelli* Chubb, and *P. albiloris* Chubb, are all applicable to this form. We have examined the type of *P. n. tobagensis* which agrees well with many examples from Venezuela and is certainly not separable. So far as we can judge without actual comparison with the types, the characters claimed by Chubb for *P. macconnelli* are simply those of the form under discussion, while *P. albiloris* represents the specimens with small white lores, of which we have many in the series before us from various parts of Venezuela including San Estaban, the type-locality.

Thus we see that not only has this form suffered much from nomenclatural changes, but even now matters in this regard are not finally settled. For, even assuming that *?L. atricapillus* Merrem be considered permanently disposed of as unidentifiable, still, as Hellmayr and Seilern have remarked, the type of *P. polychopterus* may, upon examination, be found to apply to a northern South American form, perhaps the one under discussion here.

5. PACHYRHAMPHUS POLYCHOPTERUS CINEREIVENTRIS Sclater.

Pachyrhamphus cinereiventris Sclater, Cat. Amer. birds, 1862, p. 242 ("S. Martha," ex Verreaux). TYPE.—British Museum, Sclater collection.

SUBSPECIFIC CHARACTERS.—Similar to *Pachyrhamphus polychopterus tristis* (Kaup) of Venezuela, but smaller; under parts paler, more uniform in color, sometimes obscurely freckled with whitish.

MEASUREMENTS.—Male (twenty specimens)—wing, 70.0–75.5 (72.6); tail, 51.0–57.0 (53.3); tarsus, 17.0–19.0 (18.2); exposed culmen, 11.5–13.0 (12.4).

Female (fourteen specimens)—wing, 67.5–69.5 (68.1); tail, 48.0–53.0 (50.5); tarsus, 17.0–18.5 (17.8); exposed culmen, 11.5–13.0 (12.4).

RANGE.—Santa Marta district of Colombia.

SPECIMENS EXAMINED.—Colombia (Santa Marta region): "Sta. Martha," 1 ♂; Cienaga, 1 ♂; Bonda, 15 ♂♂, 10 ♀♀; Mamotoco, 1 ♀; Fundacion, 3 ♂♂, 1 ♀; Calamar, 1 ♀; Gamara, 1 ♂; Tucurinca, 1 ♀; Aguachioa, 1 ♀; Jaraquiel, 1 ♀. Total, 37.

REMARKS.—This form is quite distinct from the form inhabiting Venezuela, Guiana, and Trinidad. Not only is it slightly smaller, but the under parts are paler and seldom show much mottling. The darker specimens, however, as might be expected, approach closely in coloration to *P. p. tristis*, but in such cases the size readily distinguishes them. The paler specimens approach the next form, *P. p. costaricensis* Chubb, and are hardly distinguishable from the darker specimens of that form except in parallel series.

Hellmayr (Nov. zool., 1906, **13**, p. 27), having examined the type of *P. cinereiventris* Sclater in the British Museum, applied the name to the Trinidad bird, explaining that the type "is dark cinereous, more or less freckled with dull blackish, especially on the throat and foreneck." Later he and Graf von Seilern (Archiv naturg., 1912, abt. A, heft 5, p. 89) used the name for the Venezuelan bird, with the remark that probably the type came from Venezuela or Trinidad.

We were strongly inclined to follow Hellmayr in this disposition of the name *cinereiventris,* and would have done so here, had we not been influenced by other considerations. Mr. Todd, on his recent visit to the M. C. Z., informed us that in his forthcoming paper on the birds of the Santa Marta region, he intended to use the name *cinereiventris* for the Santa Marta bird. He examined our series from Santa Marta, and pronounced it much more uniform than the series in the Carnegie Museum, the latter series being much larger and containing dark specimens very close to, and almost indistinguishable from, some Venezuelan examples. It was his opinion that Sclater's type really came from Santa Marta and represents an extreme variant close to the Venezuelan form. In view of this it would be well to compare the type of *P. cinereiventris* Sclater with a large series from Santa Marta before coming to a final decision in the matter. For the present, rather than rename the Santa Marta bird on the evidence at hand, we retain for it the name *cinereiventris*.

6. PACHYRHAMPHUS POLYCHOPTERUS COSTARICENSIS Chubb.

Pachyrhamphus costaricensis Chubb, Bull. Brit. orn. club, 1920, **40**, p. 74 (Bebedero, Costa Rica). TYPE.— British Museum, Salvin-Godman collection.

SUBSPECIFIC CHARACTERS.— Very similar to *Pachyrhamphus polychopterus cinereiventris* Sclater of Santa Marta, but slightly smaller; under parts paler gray with a more pearly tone — deep gull-gray (of Ridgway) rather than light neutral gray.

MEASUREMENTS.— Male (twenty specimens) — wing, 68.0–74.5 (71.0); tail, 50.5–57.3 (54.2); tarsus, 17.5–19.0 (18.5); exposed culmen, 12.0–13.0 (13.0).

Female (ten specimens) — wing, 65.0–67.0 (66.3); tail, 50.0–52.5 (51.0); tarsus, 17.5–19.0 (18.4); exposed culmen, 11.5–13.5 (12.3).

RANGE.— Panama, Costa Rica, western Nicaragua (Ridgway, *cinereiventris*).

SPECIMENS EXAMINED.— Panama: Line of Panama Railroad, 1 ♂, 1 ♀; Isthmus, Atlantic side, 1 ♂; Divala, 2 ♂♂, 1 ♀; Boquete, 1 ♂; Bogaba, 1 ♂; Chiriqui, 1 ♂; Focoume, 1 ♀. Costa Rica: El General, 6 ♂♂, 5 ♀♀; Bolson, 4 ♂♂; Boruca, 2 ♂♂, 3 ♀♀; Pozo Azul, 1 ♂, 1 ♀; Senorio, 1 ♂; Barranca Puntarenas, 1 ♂. Total, 34.

REMARKS.— *P. p. costaricensis* and *P. p. cinereiventris* are very close subspecies, and not always distinguishable separately. In series, however, the difference is perceptible, especially in the more pearly gray appearance of the Costa Rican bird.

7. PACHYRHAMPHUS POLYCHOPTERUS SIMILIS Cherrie.

Pachyrhamphus similis Cherrie, Proc. U. S. N. M., 1891, **14**, p. 343 (Greytown, Nicaragua). TYPES.— U. S. N. M. (♂ and ♀).

SUBSPECIFIC CHARACTERS.— Very similar to *Pachyrhamphus polychopterus costaricensis* Chubb of Costa Rica, and of about the same size, perhaps slightly smaller; under parts averaging a little darker and less pearly gray. Very similar in the color of the under parts to *P. p. cinereiventris*, but smaller.

MEASUREMENTS.— Male (five specimens) — wing, 71.0–71.4 (70.1); tail, 52.1–57.0 (55.2); tarsus, 17.5–19.2 (18.3); exposed culmen, 12.5–12.8 (12.6).

Female (three specimens) — wing, 69.5–70.5 (70.0); tail 52.5–55.0 (53.8); tarsus, 18.5–18.8 (18.7); exposed culmen, 11.5–13.5 (12.3).

RANGE.— Costa Rica (Atlantic side), Nicaragua, Honduras.

SPECIMENS EXAMINED.— Costa Rica: Guayabo, 1 ♀; Jimenez, 2 ♀ ♀. Nicaragua: Greytown, 2 ♂ ♂, 1 ♀; Sucuya, 1 ♂; Escondido riv., 1 ♂; Juan Venas, 1 ♂. Honduras: Sta. Ana, 1 ♂. Total, 10.

REMARKS.— This form is exceedingly close to *P. p. costaricensis* and only distinguishable in series. We have a strong feeling that the two will eventually prove to be inseparable, when a larger series of *P. p. similis* shall become available for comparison.

8. PACHYRHAMPHUS POLYCHOPTERUS DORSALIS Sclater.

Pachyrhamphus dorsalis Sclater, Cat. Amer. birds, 1862, p. 243 ("Bogotá?"). TYPE.— British Museum, Sclater collection, examined by Hellmayr who pronounced it an undoubted Bogotá skin.— *Cf.* Proc. Zool. soc. London, 1911, p. 1143.

Pachyrhamphus chapmani Chubb, Bull. Brit. orn. club, 1920, **40**, p. 74 (Sta. Elena, Antioquia, Colombia). TYPE.— British Museum, Salvin-Godman collection.

SUBSPECIFIC CHARACTERS.— Similar to *Pachyrhamphus polychopterus tristis* (Kaup), but larger; under parts much paler gray; hind neck sometimes showing a gray collar separating the black of the pileum from that of the back.

MEASUREMENTS.— Male (ten specimens) — wing, 74.0–80.5 (77.9); tail, 55.5–60.0 (57.5); tarsus, 18.0–20.0 (19.0); exposed culmen, 12.0–14.5 (12.9).

Female (two specimens) — wing 71.5–72.5; tail, 53.0 — —; tarsus, 20–19.0; exposed culmen, 12.0–12.5.

RANGE.— Western Colombia, N. W. Ecuador (Hellmayr).

SPECIMENS EXAMINED.— Western Colombia: San Antonio, 4 ♂♂; Ricaurte, 2 ♂♂, 1 ♀; Aguadita, above Fusugasugá, 2 ♂♂, 1 ♀; Rio Cali, 1 ♂, Rio Barratoro, 1 ♂. Total, 12.

REMARKS.— This is a very well-marked form, distinguishable by its large size and very pale gray under parts, of about the same color as in *P. m. marginatus* (Lichtenstein), of which Hellmayr (*loc. cit.*) thought it might be the western representative. We have before us specimens with and without the gray nuchal band, and hence the character which was supposed to separate the bird as a species proves to be not constant.

The female possesses a dark olive, not rufous, pileum which places the bird in the *polychopterus* instead of the *marginatus* group.

The range of *P. p. dorsalis* is given by Ridgway as extending north to the line of the Panama Railroad, but we believe that it does not reach so far north, as all specimens we have seen from the line of the Panama Railroad are certainly *P. p. costaricensis.*

II. THE FORMS OF PACHYRHAMPHUS MARGINATUS (Lichtenstein).

Some time ago Berlepsch (Nov. zool., 1902, **9**, p. 56) expressed the opinion that Merrem's *Lanius atricapillus* was not characterized with sufficient clearness to be accepted for *Pachyrhamphus atricapillus* of authors, and that it might equally well apply to *Pachyrhamphus niger* (Spix), suggesting that the name *Todus marginatus* Lichtenstein, of Bahia, might be used for the species. He said furthermore, that in case Lichtenstein's name were accepted, a northern form might be separable as a subspecies.

Later Berlepsch (Nov. zool., 1908, **15**, p. 141), having examined the type of *Todus marginatus* in the Berlin Museum, adopted the name *marginatus*, placing *P. atricapillus* of authors (not of Merrem) in its synonymy. Hellmayr (Nov. zool., 1910, **17**, p. 314), accepting the name *marginatus* for the species, called attention to the fact that two males and three females from eastern Brazil (Rio de Janeiro and Bahia) had longer wings and tails than specimens from Maruins, Rio Negro, Venezuela, and Guiana, adding that in case additional material should corroborate this difference, the northern bird would have to be provided with a new name, since *T. marginatus* and all its synonyms are strictly applicable to the southeast Brazilian bird.

Brabourne and Chubb (Birds of South America, 1912, **1**, p. 316) list both *P. atricapillus* (Merrem) and *P. marginatus* (Lichtenstein). For the former they give the distribution Ecuador, East Peru, and Guiana; and for the latter East Brazil. From the systematic position of these names in their list, we judge that these authors considered *atricapillus* a form of the *marginatus* and not of the *polychopterus* group, but, so far as we know, they have not given any reasons for rejecting the names in the sense used by Berlepsch.

We have examined a fairly large series of *P. marginatus* from various parts of its range, and find much individual variation. Dark specimens with or without mottled backs may be found from the same localities as paler specimens with uniform gray backs. Skins from Bahia, Para, Venezuela, and the Peruvian Amazons, can be readily matched, in color, in a large series from French Guiana.

We believe that a northern form of *Pachyrhamphus marginatus* is separable only by its smaller size, but the difference is sufficient to warrant recognition. The two forms are:—

1. PACHYRHAMPHUS MARGINATUS MARGINATUS (Lichtenstein).

Todus marginatus Lichtenstein, Verz. doubl., 1823, p. 51 (Bahia). TYPE.— Berlin Museum, adult ♀.

Pachyrynchus albifrons Swainson, Anim. in menag., 1838, p. 289 ("Brazil"— we designate Bahia). TYPE.— Originally in Swainson collection, ♂.

Pachyrhynchus swainsonii Jardine and Selby, Illust. orn., 1829, **2**, add. [4], no. 6 ("Brasilia"— we designate Bahia). TYPE.— Originally "in Museo Dom. Swainson, et Gulielmi Jardine, Baronetti,"— ♀.

Pachyrhamphus atricapillus (not of Merrem) of authors.

SUBSPECIFIC CHARACTERS.— Adult ♂ similar to *Pachyrhamphus polychopterus tristis* (Kaup), and of about the same size, but hind neck gray; forehead with a narrow but distinct whitish band; interscapular region partly black; under parts pale gray. Adult ♀ head reddish brown, contrasting with back.

MEASUREMENTS.— Male (eight specimens) — wing, 70.0–76.0 (73.2); tail, 51.0–56.0 (53.6); tarsus 17.0–18.5 (17.8); exposed culmen 12.0–13.0 (12.4).

Female (one specimen) — wing, 70.5; tail, 52.0; tarsus, 19.5; exposed culmen, 12.0.

RANGE.— Eastern and southeastern Brazil.

SPECIMENS EXAMINED.— Brazil: Bahia (including trade skins), 9 ♂♂; San Sebastião, 1 ♀; Diamantina, 1 ♀; "Bresil," 1 ♂. Total, 12.

REMARKS.— We have not seen any adult males from southeastern Brazil. Measurements of the adult female from San Sebastião seem to indicate that birds from the southern parts of the range may be somewhat larger.

2. PACHYRHAMPHUS MARGINATUS NANUS, subsp. nov.

TYPE.— M. C. Z. 82,600 (Penard coll. 2,008), adult ♂. East Peru: Xeberos, Peruvian Amazons. Bartlett.

SUBSPECIFIC CHARACTERS.— Similar to *Pachyrhamphus marginatus marginatus* (Lichtenstein) of Bahia, but decidedly smaller; coloration about the same, but white frontal band narrower and less conspicuous.

MEASUREMENTS.— TYPE.— Adult ♂ — wing, 67.3; tail, 46.0; tarsus, 17.5; exposed culmen, 12.3.

Male (fourteen specimens) — wing, 64.2–70.5 (67.8); tail, 45.6–51.3 (48.6); tarsus, 17.0–18.3 (17.7); exposed culmen, 11.5–12.5 (12.1).

Female (twenty-two specimens) — wing, 62.5–66.0 (64.8); tail, 43.0–49.0 (46.8); tarsus, 16.5–19.0 (17.6); exposed culmen, 11.8–13.3 (12.2).

RANGE.— Northeastern Brazil, Guiana, Venezuela, Upper Amazon, eastern Peru.

SPECIMENS EXAMINED.— Peru: Xeberos, 1 ♂ (TYPE). Venezuela: Sierra de Carabobo, 1 ♂; Upper Caura River, 2 ♀♀. Dutch Guiana: "Surinam," 1 ♂. French Guiana: Pied Saut (Oyapock), 8 ♂♂, 7 ♀♀; Tamanoir (Mana River), 10 ♂♂, 13 ♀♀. Northeastern Brazil: Demonti (Oyapock), 1 ♀; North Para, 2 ♂♂, 2 ♀♀. Total, 48.

REMARKS.— We cannot detect any difference between the type from Peru and several examples in the large series from Guiana.

ALLENIA FUSCA (P. L. S. Müller).

Muscicapa fusca P. L. S. Müller, Natursyst. suppl., 1776, p. 170 (Martinique).
Muscicapa fusca Boddaert, Tabl. Pl. enl., 1783, p. 33 (not of p. 34), pl. 568, fig. 2.

Turdus montanus (not of Voigt) Lafresnaye, Rev. zool., 1844, p. 167 (Guadeloupe). Type.— M. C. Z.
Turdus apicalis Hartlaub, Syst. orn. West-Africas, 1857, p. 76.

The name *Muscicapa fusca* used by Müller, and later by Boddaert, applies to the Scaly-breasted Thrasher generally known as *Allenia apicalis* (Hartlaub). Both names are based upon Daubenton's Gobe-Mouche brun de la Martinique, Pl. enl. 568, fig. 2. Müller's description is very brief, but his allusion to the "Braune Fliegenfänger" "aus Martinique" of Buffon leaves no doubt as to its identity.

The figure in Daubenton's plate is rather poor, but shows distinctly the scaly breast and white spots on the rectrices. The rictal bristles are too prominent, and the back is shown much redder than it should be, but in this latter respect agrees very well with Lafresnaye's type of *Turdus montanus*, M. C. Z. 76,370, Laf. coll. 3,621, which in its present faded condition from long exposure to light, is much redder above than fresh specimens with which we have made comparison. It is likely, too, that the pigment used in Daubenton's plate may have undergone some change during its long existence, making it much redder than it originally had been.

A NEW SUBSPECIES OF SICALIS FLAVEOLA (LINNÉ).

When the birds collected during the Harvard Peruvian expedition of 1916 were reported upon by the senior author and Noble (Auk, 1918, **35**, p. 462), specimens of *Sicalis flaveola* from South America with which to compare the Peruvian examples were not available. The M. C. Z. has since acquired a specimen collected in Brazil by the Wilkes United States Exploring Expedition. This specimen agrees with a series from Jamaica, but both differ from the Peruvian bird, for which we propose

Sicalis flaveola valida, subsp. nov.

Type.— M. C. Z. 79,766. Adult ♂. Peru: Sullana, 29 July, 1916. G. K. Noble.

Subspecific characters.— Similar to *Sicalis flaveola flaveola* (Linné) but larger; upper parts more yellowish green, less olive-green.

Measurements.— *S. f. valida*. Type.— adult ♂ — wing, 82.2; tail, 58.5; tarsus, 21.5; exposed culmen, 11.3.

Male (two specimens) — wing, 78.5, 83.0; tail, 55, 58; tarsus, 20, 20.5; exposed culmen, 11.3.

S. f. flaveola. Both sexes, ten specimens — wing, 71–74.5 (72.6); tail, 50.5–55.0 (52.6); tarsus, 18.0–19.0 (18.6); exposed culmen, 10.5–11.0 (10.8).

SPECIMENS EXAMINED.— *S. f. valida* — Peru: Sullana, 1 ♂; Huancabamba, 1 ♂; Bellavista, 1 ♂. Total, 3.

S. f. flaveola — Brazil, 1. Jamaica 5 ♂♂, 5 ♀♀. Unknown, 1. Total, 12.

REMARKS.— The name *Sicalis flaveola* is based upon *Fringilla flaveola* Linné, Mus. de Geer — Surinam accepted as type-locality by Berlepsch and Hartert (Nov. zool., 1902, **9**, p. 27). We have no Surinam specimens for comparison, but assume that the Brazilian and Jamaican material at our disposal represents true *flaveola* with sufficient exactness. Our Brazilian specimen, although serviceable for measurements, is rather old and the colors may be slightly dulled. For this reason we have made comparisons chiefly with the Jamaican material. It must be remembered that the species is not a native of Jamaica, but was introduced from South America some time ago. Gosse in his Birds of Jamaica gives an account of its introduction from "Madeira" by a man named Shakespeare, as communicated to him by Mr. Richard Hill, but he suggested that the birds may have been brought from Brazil.

The measurements given by Tackzanowski (Orn. Perou, 1886, **3**, p. 56) for the Peruvian bird — wing ♂, 77–78; ♀, 76 — are somewhat smaller than those of the specimens collected by Noble, but still appreciably larger than those of our Jamaican and Brazilian birds, or the Brazilian specimen mentioned by Cory (Birds of the West Indies, 1889, p. 100).

Tackzanowski (*loc. cit.*) describes the female as having a smaller, less orange front. From our material, however, assuming the specimens to have been correctly sexed by the collectors, we cannot detect any difference whatever between the male and female, in coloration or in measurements.

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THE ANTS OF THE FIJI ISLANDS.

By W. M. Mann.

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No. 5.— *The Ants of the Fiji Islands.*

By W. M. Mann.

The ants listed and described in the present paper were collected by the writer during 1915–1916, when about ten months were spent in the Fijis as Sheldon Travelling Fellow of Harvard University.

Itinerary.

The Lau Archipelago was first visited. At Loma Loma on Vanua Mbalavu I found a small cutter, the Lotu Wesele, belonging to the Wesleyan Mission, about to start for Ono i Lau at the southern extremity of the group. Permission to travel on her was given me by Rev. A. W. Amos at Lakeba and this enabled me to make a general, though hurried, survey of fifteen of these islands. Certain fortuitous circumstances, such as bad winds, native ceremonies, and the discovery by our sailors of a roasted shark in a village, delayed the voyage at various points and occasioned stops of several days at Tuvuca, Lakeba, Kabara, and Ono i Lau, which permitted more extensive collecting. At Munia, I remained over a week-end as guest of the owner of the island, Mr. H. H. Steinmetz.

On Taviuni I lived with Dr. R. S. Trotter who had charge of the government hospital at Waiyevo, and collected chiefly in the hills back of the native village of Somo Somo. One excursion was made to the mountain lake in the interior and another to the MacKenzie estate at Nagasau, fourteen miles down the coast.

Vanua Levu was twice visited; the first time by crossing from Taviuni to Buca Bay. I remained for some time at Lasema, situated a short distance up the Lasema River, where Mr. G. U. Solney, the proprietor of a saw-mill, extended to me the open hospitality characteristic of his native Australia. At Labasa, quarters were obtained in the officers' barracks of the Colonial Sugar Company and trips made from there into the mountains about Suene. Later, Captain David Robie of Levuka, took me in his launch the Annie to Wainunu on the south coast where I lived for a week at the tea plantation as guest of the owners, Captain Robie and Mr. G. C. Barrett.

On Viti Levu I collected in a number of localities, on the Rewa River at Nausori and Koro Vatu, on the Tai Levu coast, at Waiyanitu on the Navua River, about Suva and finally walked across the island, from Ba to Nadarivatu, then to Koro Vatu by way of Navai and Nasoqo and down the Rewa by launch to Suva. Part of this trip was made possible by Mr. T. Spence, Commissioner at Nadarivatu, who arranged with the chiefs for native porters to carry my equipment.

A month was spent on Kadavu, where I lived at Vunisea with Mr. W. D. E. Alcock, the young magistrate of the island, and made many trips with him and with Mr. T. E. Wilson of Vanua Ava, both of whom took an active interest in my work.

I am indebted to the Colonial Secretary for letters explaining my purpose in the islands to the District Commissioners and to the various native chiefs. Mr. C. W. Knowles, Superintendent of Agriculture, provided laboratory facilities in his office at Suva. Mr. F. P. Jepson, Entomologist of Fiji and Mr. Foy, Manager of the Bank of New Zealand at Suva aided me personally in many ways. Mr. and Mrs. E. Travis Rimmer at Waiyanitu, Mr. C. S. Hunt at Bega on the Rewa River, and the MacKenzies at Nagasau, entertained me in their homes while I was collecting in the vicinity. To all of these and to Mr. Charles Caldwell of Suva, my companion on a number of trips, and to Dr. St. Johnston of Loma Loma, I am grateful for much assistance.

I shall remember the native Fijians, especially those of Lau, Kadavu, and the interior of Viti Levu and Vanua Levu, as the kindliest, most hospitable folk I have known. The best of their houses, food, and boats were always at my disposal. At each village the reception was the same. The chief moved out of his house. I moved in. Shortly afterward the entire female population would appear, each with a basket of food containing quantities of vegetables, boiled bananas, prawns, fish, and usually a recently killed and hurriedly cooked chicken. In the evenings after yangona (cava) had been served, with appropriate ceremonies, the younger set, decorated for the occasion with garlands and coco-nut oil, would enter the house, and sing native songs till I was sleepy; sometimes longer. With a desire to be courteous, a desire that has been educated out of many who live in contact with the whites, they acted as guides and porters and brought to me many specimens of the "little beasts" that I was searching for. I have lived among many less pleasant and considerate people.

THE ANT FAUNA.

The study of Fijian ants has a short history. In 1866 Mayr (Sitz. Akad. wiss. Wien, 1866, **53**, p. 484–518) described *Odontomachus angulatus, Pheidole oceanica, Cardiocondyla nuda, Camponotus cristatus, C. laminatus, C. schmeltzii,* and *C. dentatus.* In 1870 (Verh. Zool. bot. gesellsch. Wien, 1870, **20**, p. 939–996) the same author described *Pheidole umbonata, Camponotus* (*Colobopsis*) *oceanicus,* and *C. carinatus* and noted *C. rufifrons* F. Smith from Ovalau. These eleven species were all taken on Ovalau and Mayr described his species from specimens in the Godeffroy Museum.

In the present paper seventy-eight species belonging to twenty-six genera are listed and two genera are described as new. In addition to these there are in the collection several species of Prenolepis and Pheidole which I have not been able to identify, as the males or soldiers were not found.

As Turner (Trans. Ent. soc. London, 1918, p. 333–346) has recently listed only fifty-three species of Hymenoptera from Fiji, among which are included no species of such widely distributed and extensive families as the Mutillidae, Proctotrypidae, Cynipidae, and Tenthredinidae, it will be seen that the insect fauna of Fiji has been almost entirely neglected.

In the Lau Archipelago, on Kabara and Waquava, where native forests still exist, I found two species of Camponotus belonging to the strictly Fijian subgenus Myrmegonia. *Strumigenys* (*Cephaloxys*) *vitiensis,* sp. nov. was taken on Kabara and *Pheidole umbonata* Mayr was found to be abundant on Vanua Mbalavu, Munia and Tuvuca. *Pheidole megacephala* Fabr. and *Solenopsis geminata rufa* Jerd. are not among my material. Their absence is one of the few interesting features of the Lau fauna. Besides these, Lau yielded only "tramp" species found in similar localities the world over. On Lakeba, one of the oldest of the islands, I wandered for weary days over the eroded red clay hills, searching for specimens in the sparse forests of Casuarinas and Pandanus palms and found almost nothing. So, when on the beach at Munia I saw the trunk of a large sago-palm that must have floated from at least as far as Taviuni, the nearest natural habitat of these Cycads, it was easy to imagine such a log as having originally brought to the Archipelago the nucleus of its entire land fauna. However, the general aspects of animal life in Lau are the same as on the larger islands, though very much limited by ecological conditions. On Vanua Levu, which is rich in endemic Fijian forms, when I collected in similar districts of red clay soil with Casuarina and Pandanus palms, my results were the same as on Lakeba. The fauna of Fiji, excepting that of the littoral portions, is a forest inhabiting one, and when the forests have been destroyed, as in most of Lau, the dependent animal forms have also disappeared, so the negative character of the Lau fauna has little zoögeographical significance.

The littoral fauna of the larger islands is much the same as in Lau, and the other South Sea Island groups; few of the plant or animal forms are endemic to Fiji.

There is little virgin forest in Fiji. Seemann, in the '60's, states that at that time none remained. This is due to the native custom of clearing land for gardens by firing the forest. The moss forests of the mountains about the lake on Taviuni and on Mt. Victoria and Mt. Washington are exceptions and the rain forests at Nadarivatu, if not virgin forest, are at least magnificent woods.

In the forested districts, insect life is abundant, compared with other insular regions, and chiefly endemic, though foreign species are coming in rapidly. The life of mountain ranges of each of the larger islands is similar to the others and careful collecting at any good locality (Nadarivatu was the best) yields the majority of the species of the group, though each island has peculiar species, or the same species is represented on other islands by subspecific or varietal forms, a condition typical of island faunas.

Sixty-four species of ants have been recorded from New Caledonia, so the ants of that island and Fiji are approximately equally well developed. Forty-two genera are known from Fiji and New Caledonia together, and of these the following seventeen genera are common to both:— Trachymesopus, Ponera, Lobopelta, Anochetus, Odontomachus, Pheidole, Monomorium, Solenopsis, Rogeria, Tetramorium, Strumigenys, Iridomyrmex, Technomyrmex, Tapinoma, Plagiolepis, Camponotus.

Of these, Trachymesopus, Technomyrmex, and Tapinoma are represented only by tropicopolitan species. Two genera, Promeranoplus and Prodicroaspis, are not known except from New Caledonia and two, Poecilomyrma and Archaeomyrmex, are apparently confined to Fiji.

Genera of ancient aspect present in Fiji and not known from New Caledonia are Wheeleripone, Proceratium, Cerapachys, Cardiocondyla, Adelomyrmex, Triglyphothrix, and Rhopalothrix, most of them widespread in distribution and not characteristic of any particular zoögeographical region.

In New Caledonia, on the other hand, occur Myrmecia, Amblyopone, Rhytidoponera, Prionogenys, Orectognathus, and Leptomyrmex, genera typical of Australia, none of which occur in Fiji. In addition, Vollenhovia,[1] Oligomyrmex, Lordomyrma, Meranoplus, Xiphomyrmex, and Polyrhachis,[1] Indomalayan genera, are found there and are lacking in Fiji.

Of the seventy-eight species listed, eight species (*Monomorium pharaonis, M. floricola, Tetramorium simillimum, T. guineense, Tapinoma melanocephalum, Plagiolepis longipes, Prenolepis longicornis,* and *P. burbonica*) are tropical "tramp" species recently introduced; twelve species (*Ponera biroi, Anochetus graeffei, Pheidole umbonata, P. oceanica, Cardiocondyla nuda, Solenopsis cleptes, Rogeria stigmatica, Tetramorium tonganum, T. pacificum, Strumigenys godeffroyi, Iridomyrmex anceps,* and *Technomyrmex albipes*) occur also in other parts of the Melanesian region; three species (*Euponera stigma, Odontomachus haematoda,* and *Camponotus maculatus*) are ancient species of almost world-wide distribution.

The remaining fifty-five species constitute a peculiar ant fauna; the 71%, not counting subspecies and varieties, which would considerably increase the proportion, indicates a very high degree of endemism.

The chief peculiarity of the ant fauna is the unusual development of the genera Cerapachys, Lobopelta, Pheidole, Rogeria (subgenus Irogera), Strumigenys, and Camponotus (subgenus Myrmegonia). The occurrence of so many species of Lobopelta, with its ergatoid females, is especially interesting. The absence of any of the varieties of *L. falcigera,* a widely distributed species which occurs in Hawaii should also be noted. Equally interesting, and more important from the distributional standpoint is the absence of any species of Dolichoderus.

In general, Fiji and probably also the New Hebrides, belongs with New Caledonia in the Melanesian subregion, characterized as far as genera are concerned, chiefly by negative resemblances but with groups of peculiar species, many of archaeic, though not primitive types. The presence in Fiji of such relict forms as the frogs, Iguana, boas, Phyllium, and the luminous elaterid Photophorus confirms the results of a study of the ant fauna. Fiji may be considered as the western limits of this region, and the absence of all definite affinities with regions other than the ancient Tropicopolitan, indicate a longer isolation than that of New Caledonia.

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[1] Probably recently introduced.

Myrmecophilous plants.

Bulbous epiphytes of the genera Myrmecodia and Hydnophytum, I found none in flower so cannot differentiate between the genera, are common in Fiji. They are known to the natives by the name "seki-seki," and are used in the witchcraft ceremony of "drau ni kau."

One takes from his enemy a hair from his head, some food left from his meal or some other thing intimately connected with him. This is placed with leaves of Myrmecodia and parts of other plants in a bamboo tube, which is then sealed. A curse is wished on the enemy and as the contents of the tube ferment or decompose, he becomes afflicted with a malady, (boils seem to be the favorite curse) and can only be cured by unsealing the jar and letting the gas escape. There is no doubt that, to the native mind, this is taken seriously and the psychological and resultant physical affects on one who knows he is being bewitched by "drau ni kau," are real. The government has framed laws against the practice. On our walk across Viti Levu, the people in one village gravely warned my boys of the danger in the next village and cautioned them against leaving crumbs of food about. Portions of the bulb are considered a remedy for deafness by the natives about Nadarivatu.

At the edge of the moss forest by the Taviuni Lake, I found, on the stunted trees, a number of large bristly bulbs. Each of these was tenented by a populous colony of *Iridomyrmex nagasau* subsp. *alticola.* In the forest on the McKenzie estate at Nagasau, another species of bulb, smaller and less bristly was abundant high in the trees. Of a dozen examined, all contained colonies of *Iridomyrmex nagasau.* A species at Nadarivatu occurred in similar situations, but, instead of always sheltering one certain species of ant, was used as a nesting site by various species of Iridomyrmex, Camponotus, Poecilomyrma, and Pheidole, and many contained no ants at all, but myriopods, spiders, scorpions, or geckos and their eggs.

In the preparation of this paper, Prof. W. M. Wheeler has aided me repeatedly and his collection has been always available for comparisons.

The majority of the drawings were made by Dr. R. S. McEwen.

1. Cerapachys (Cerapachys) vitiensis, sp. nov.

Worker. Length 3 mm.

Head a third longer than broad, as broad in front as behind, with moderately convex sides, angulate occipital corners and broadly and shallowly concave occipital border. Carinae of cheeks strong, tridentate, the two anterior teeth blunt, the basal one smaller and more acute. Mandibles finely denticulate. Frontal carinae approximated, elevated, broadly rounded. Antennae thick, their scapes extending to a point opposite the posterior border of eyes; funicular joints 2–10 transverse; terminal joint as long as the six joints preceding. Eyes rather large and convex, situated at sides of head a little in front of middle. Thorax narrower than the head, more than twice as long as broad, slightly narrowed in the mesonotal region, as broad in front as behind, without sutures; in profile moderately convex above, rounding into the declivity which is flat and submarginate laterally. Petiole a little narrower than epinotum, from above distinctly broader than long, slightly broader in front than behind, rounded at sides posteriorly, and truncate in front; in profile a little longer than high, with a stout tooth anteroventrally. Postpetiole broader than petiole, and broader than long, slightly narrowed in front, sides feebly convex. First gastric segment a little longer than broad and as broad in front as behind. Pygidium with a circular, impressed disc at middle, its border spinulose. Legs rather long and slender.

Shining. Mandibles with scattered punctures. Head and thorax with piligerous punctures, which are fine and scattered on front of head, coarser and irregular on sides of occiput, finer and sparse on the dorsum of thorax and very coarse and confluent on plurae. Punctures of petiole and postpetiole very coarse, and abundant but not confluent. Gaster with finer, regular punctures.

Erect hairs abundant, longest on gaster and interspersed with shorter ones on thorax.

Black; head and gaster brownish; appendages reddish brown.

Vanua Levu: Lasema.

Described from six workers taken beneath a stone in a bog. The dorsum of the thorax is mostly smooth, with a few fine scattered punctures. *Type.*— M. C. Z. 8,681.

1a. CERAPACHYS (CERAPACHYS) VITIENSIS Mann, subsp. SCULPTURATUS, subsp. nov.

Worker. Length 3 mm.

Differing from typical *vitiensis* having the front of head more coarsely punctate and the thoracic dorsum with very coarse punctures, and only a small smooth surface in the mesonotal region.

Viti Levu: Nasoqo.

Described from a unique worker.

2. CERAPACHYS (CERAPACHYS) MAJUSCULUS, sp. nov.

Worker. Length 4.50 mm.

Head a fourth longer than broad, as broad in front as behind, with moderately convex sides and shallowly and not broadly concave posterior borders. Mandibles finely denticulate. Carinae of cheeks prominent, armed with three widely separated blunt teeth. Frontal carinae prominent and approximated, broadly rounded in profile. Antennal scapes extending a little beyond the posterior border of eye. Funicular joints 2–10 transverse; terminal joint as long as the five preceding joints together. Eyes convex, situated at sides of head a little in front of middle. Thorax subquadrate, a little more than twice as long as broad, and very slightly narrowed at mesonotal region; in profile moderately convex. Epinotal declivity flat, submargined laterally and above. Petiole broader than long, as broad in front as behind; in profile higher than long, with a stout anteroventral tooth. Postpetiole broader than petiole, broader than long, and slightly narrowed in front. First gastric segment a fourth longer than broad. Pygidium flat discally, its border spinulose.

Shining. Mandibles with sparse, coarse punctures. Head and thorax with moderately strong, scattered piligerous punctures. Petiole and postpetiole with more abundant and much coarser punctures. Gaster finely punctate; the apical borders of each segment and the margins of the pygidium with coarse, shallow punctures.

Fine erect hairs moderately abundant on head, body, and appendages.

Black; gaster brownish; appendages dark reddish brown.

Viti Levu: Nadarivatu.

Described from a number of workers, from several colonies taken with larvae and pupae beneath stones. *Type.*— M. C. Z. 8,682.

Key to Fijian Species.

1. Length 4.5 mm. Punctation of head and thorax fine, that of petiole and postpetiole stronger, but widely separated. . . . . *majusculus* Mann

Length 3 mm. Punctation of head and thorax coarse, that of petiole very coarse and dense, giving these parts a subrugose appearance . . . . 2.

2. Dorsum of thorax at middle with fine punctures, sparsely distributed and much finer than those at the sides of dorsum and on pleurae. *vitiensis* Mann

Dorsum of thorax at middle with coarse punctures similar to those of pleurae. . . . . *vitiensis* subsp. *sculpturatus* Mann

3. CERAPACHYS (SYSCIA) CRYPTUS, sp. nov. Fig. 1.

Worker. Length 4 mm.

Head a fourth longer than broad, as broad in front as behind, sides feebly convex, posterior border shallowly concave. Mandibles elongate triangular, blades denticulate. Carinae of cheeks not very strong, and crenulate rather than toothed. Clypeus short, broadly rounded at anterior border. Frontal carinae approximated in front, fused behind. Antennae short and thick, their scapes less than half as long as head, funicular joints 2–7 slightly transverse, terminal joint about as long as the four preceding joints. Thorax much narrower than the head, $2\frac{1}{2}$ times as long as broad, broadest in the pronotal

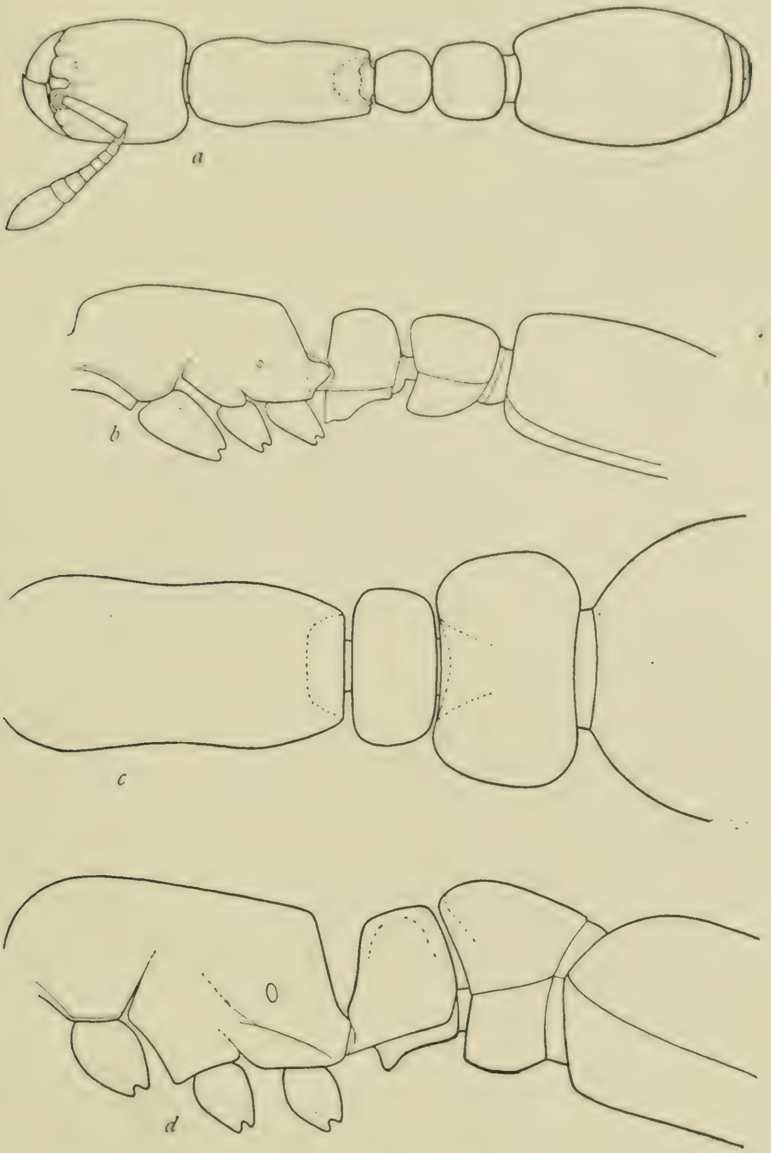

Fig. 1.— Cerapachys (Syscia) cryptus Mann. *a.* Worker. From above. *b.* Worker. Lateral view of thorax and petiole. *c.* Female. Thorax and petiole from above. *d.* Female. Lateral view of thorax and petiole.

region and narrowest in the mesothoracic region, humeri rounded. Epinotal declivity flat, submargined laterally. Petiole a little narrower than epinotum, scarcely broader than long, sides scarcely convex, in profile higher than long, rounded above and behind, flat in front, with a stout tooth anteroventrally. Postpetiole a little broader than long and somewhat narrowed in front. Basal gastric segment very long, twice as long as broad and nearly five times the length of the other segments together. Pygidium small, its surface impressed, its border strongly denticulate.

Subopaque. Mandibles with coarse punctures and fine striae. Head, thorax, and abdomen covered with moderately coarse punctures and rugulose between them, the gaster less coarsely so than the rest.

Fine, silky, yellow erect pubescence uniformly abundant throughout.

Reddish brown.

Female. Length 5.25 mm., apterous.

Head proportionately shorter than in worker. Eyes small and flat, situated well in middle of front of sides of head. Ocelli well developed. Thorax very similar to that of worker. Petiole as broad as epinotum, more than twice as broad as long and depressed at the middle of dorsal surface, with anterior angles subgibbous; in profile distinctly higher than long, armed anteroventrally with a stout tooth. Postpetiole very large, nearly twice as long as the petiole and very much broader, with the dorsal surface distinctly and broadly impressed at middle. Gaster long and slender; first segment twice as long as broad, as broad in front as behind, with subparallel sides.

Less rugose than worker. Thorax covered with irregular and unevenly distributed punctures, and more shining than in the worker.

Color as in worker.

Viti Levu: Nadarivatu.

The specimens are from a large colony found beneath a big stone after a heavy rain. A small pocket in the earth, about an inch and a half in diameter and two thirds of an inch deep, was packed with larvae and adults, but no pupae were present.

The single female is pale in color, and I should consider it a callow were not all of the large series of workers in the same colony similarly colored. It differs from the worker strikingly in the structure of the petiole and postpetiole but the thorax is similar in structure in both phases. *Type.*— M. C. Z. 8,683.

3a. CERAPACHYS (SYSCIA) CRYPTUS Mann, subsp. FUSCIOR, subsp. nov.

Worker. Length 4 mm.

Differing from *cryptus* in sculpture. The petiole and postpetiole are much more coarsely and deeply punctate and the punctures of the gaster larger and deeper and more regular.

The color is dark reddish brown to black, with the gaster and appendages lighter.

Taviuni: Somo Somo.

Several small colonies with pupae were found beneath stones after rains. When disturbed the workers roll up and feign death, making no attempt to sting when picked up. *Type.*— M. C. Z. 8,684.

4. Wheeleripone aterrima, sp. nov. Fig. 2.

Worker. Length 2.50–3 mm.

Head a fourth longer than broad, slightly narrowed in front, sides moderately convex, posterior corners rounded, occipital border very feebly concave at middle. Mandibles elongate, their blades with small, widely separated and blunt denticulae. Clypeus rather flat at middle, rounded at anterior border. Frontal area distinctly impressed, carinate at middle. Frontal carinae moderately divergent, extending to a point about opposite the posterior border of eye. Antennae slender; scapes surpassing occipital corners by more than one fourth of their length; first funicular joint nearly as long as the second and third together, joints 2–7 about as long as broad, 8–10 longer than broad; terminal joint as long as the two preceding joints. Eyes convex, situated at middle of sides of head. Thorax robust, pronotum one and two thirds times as broad as long, with very broadly rounded humeri; in profile rather flat. Promesonotal impression fine, but very distinct. Mesonotum more than three times as broad as long, surface flattened. Mesoëpinotal impression rather broad at middle. Basal portion of epinotum feebly convex, about as long as the declivity, from which it is separated in profile by a rounded angle. Petiole broader than long with strongly rounded sides and straight anterior and posterior borders; in profile higher than long and convex above,

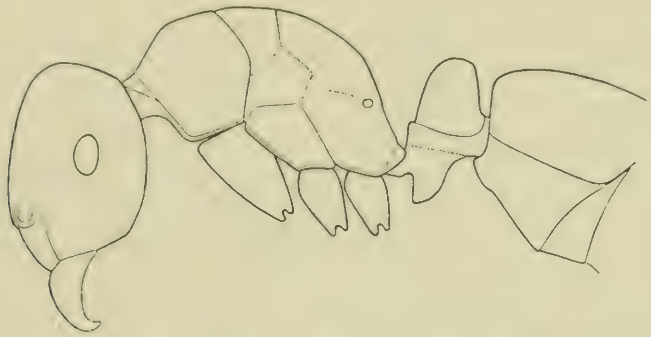

Fig. 2.— Wheeleripone aterrima Mann. Worker. Lateral view of head, thorax, and petiole.

armed anteroventrally with a large, lamellate tooth, obtusely angulate in front. First gastric segment toothed anteroventrally. Legs long and rather slender.

Strongly shining. Mandibles with very sparse punctures. Head, thorax, and abdomen with coarse piligerous punctures which are stronger and most abundant on cheeks, occiput, and sides of front, sparse on the other parts.

Very long and silky yellow erect hairs rather sparsely distributed on thorax and abdomen, shorter on head and much shorter on appendages.

Color jet black; appendages bright reddish brown.

Female. Length 3.25 mm.

Resembling the worker, except for the usual sexual differences. The eyes are larger, the ocelli well developed. The wings are hyaline, with veins and stigma fuscous. Parapsidal furrows short and straight.

The sculpture is similar to that of the worker; head coarsely punctate, the remainder irregularly and sparsely punctate.

Male. Length 2.5 mm.

Head, excluding eyes, distinctly longer than broad, rather broadly rounded behind. Eyes convex, less than half as long as sides of head, situated a little in front of middle. Ocelli large. Mandibles very well developed, similar in shape to those of worker. Clypeus flattened at middle, broadly rounded at anterior border. Frontal carinae short and curved. Antennae 14-jointed, slender, their scapes extending a little beyond posterior borders of eyes, 1st funicular joint rounded, a little shorter than the second, remaining joints cylindrical, the second twice as long as broad, the others increasing in length toward the apex, terminal joint tapering, as long as the two preceding joints and about five times as long as broad. Thorax robust, broadest in front of wing insertions. Mesothorax with strong Mayrian furrows, margined along apical half of border. Scutellum convex, broader than long. Base of epinotum feebly rounded, about half as long as the flat declivous portion. Petiole in profile longer than deep, narrowed and evenly convex above; from above, a little longer than broad and slightly narrowed in front. Gaster slender. Genitalia prominent; penicelli large, stipites elongate and coarsely ciliate apically.

Shining. Head rugosely punctate, the remainder with scattered irregular punctation.

Pilosity similar to worker.

Reddish brown throughout. Wings hyaline, veins and stigma brown.

Viti Levu: Waiyanitu (Type-locality). Vanua Levu: Lasema, Suene. Kadavu: Vanua Ava. Taviuni: Mountains south of Somo Somo.

Occurs in small colonies beneath stones, not commonly, though widely distributed. *Type.*— M. C. Z. 8,685.

5. Proceratium relictum, sp. nov. Fig. 3.

Worker. Length 3.75 mm.

Head a little longer than broad, slightly narrowed in front, with very feebly convex sides, rounded corners and straight occipital border. Mandibles elongate triangular accuminate apically, rather strongly narrowly convex at middle of outer border; blades with seven stout, triangular, separated teeth. Clypeus very short and rounded in front. Frontal carina short, moderately arcuate. Frontal area strongly impressed. Anterior two thirds of front with a median carina, which becomes more distinct apically. Antennal scapes much thickened apically, extending five sixths the distance to occipital corners; funicular joints 2–3 a little longer than broad, joints 4–10 slightly transverse, terminal joint as long as the three joints preceding. Thorax robust, broadest at humeri, pronotal region rounded at sides. Basal portion of epinotum with a suture-like transverse impression; declivity shallowly concave, margined laterally, the margins with a stout triangular tooth a little above middle. Petiole squamiform, its border narrow, broadly rounded above, anteroventral tooth elongate triangular. First gastric segment as long as broad.

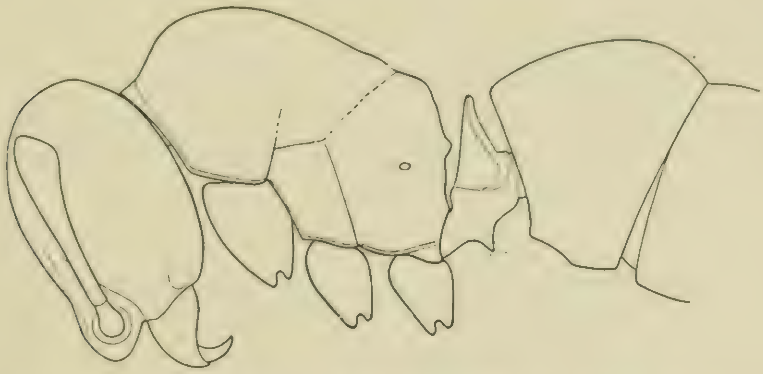

Fig. 3.— Proceratium relictum Mann. Worker. Lateral view of head, thorax, and petiole.

Moderately shining. Mandibles coarsely and densely striate. Head rugulose and finely and rather densely punctate, the remainder finely but not densely punctate, and not rugulose.

Erect pilosity and silky and recumbent hairs moderately thick on head, body, and appendages.

Dark reddish brown; appendages lighter.

Female (deälated). Length 4.5 mm.

Eyes small, flat, situated at sides of head a little behind the middle. Mesonotum little convex; parapsidal furrows less than a third as long as mesonotum. Scutellum subcircular. Base of epinotum very short and flat, separated from declivity by an obtuse margin; declivity concave above, convex below, margined at sides, the margins developed into very large stout angles at upper corners.

Sculpture, pilosity, and color as in worker.

Taviuni: Somo Somo.

Described from seven females and a solitary worker found under different stones in the hills back of the village. The adults are very slow in movement, but active with their stings.

6a. EUPONERA (TRACHYMESOPUS) STIGMA (Fabricius), var. QUADRIDENTATA (F. Smith).

Ponera quadridentata Smith, Journ. proc. Linn. soc. London. Zool., 1858, **3**, p. 143, ☿.

Viti Levu: Waiyanitu. Vanua Levu: Lasema.

A very few workers and females found in decaying logs, belong to this variety, which is known to be distributed through the islands from Aru to Fiji. It probably occurs also in Samoa and the other larger and wooded Polynesian Islands.

7. PONERA VITIENSIS, sp. nov. Fig. 4.

Worker. Length 3.10–3.25 mm.

Head a little longer than broad, slightly narrowed in front, with moderately convex sides, broadly rounded occipital angles and narrowly and distinctly concave border. Mandibles with 10–11 small triangular teeth. Clypeus convex at middle, not carinate, rounded at anterior border. Antennal scapes slender at basal half, moderately thickened apically, barely attaining occipital corners; first funicular joint as long as the second and third together, all the joints longer than broad, terminal joint a little longer than the two preceding joints together. Eyes small, but distinct, situated in front of anterior third of sides. Thorax slender, with strong sutures. Pronotum about as long as broad, rounded at sides and feebly convex above. Mesonotum suboval, a little broader than long. Base of epinotum as long as the declivity, narrowed above, separated from declivity by a very broad angle. Declivity flat, rather narrowly margined at basal half of sides. Petiolar node in profile narrowly rounded above, with convex anterior and slightly concave posterior surfaces, from above three times as broad as long, convex in front and at sides and narrowly concave at middle of posterior border.

Shining. Mandibles with a few coarse punctures. Head and body finely, not very densely, punctate.

Short, erect yellow hairs exceedingly sparse on thorax and abdomen and fine yellow pubescence everywhere.

Brownish yellow, head more brownish than thorax and abdomen.

Female. Length 3.5 mm.

Very similar to worker. The petiole more narrowed apically. The eyes are large and moderately convex, situated at sides of head at a distance of two thirds their length from base of mandibles. Wings hyaline with pale veins and stigma.

Viti Levu: Nadarivatu.

Described from several workers and a single female from small colonies found beneath stones, generally deeply imbedded ones in damp situations. *Type.*— M. C. Z. 8,686.

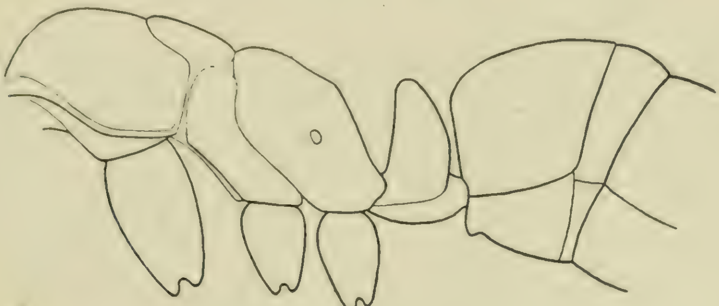

FIG. 4.— Ponera vitiensis Mann. Worker. Lateral view of thorax and petiole.

Ponera vitiensis is related to *truncata* F. Smith, *moczaryi* Emery, and *pruinosa* Emery, but may be distinguished from the latter two by its much smaller eyes and from *truncata* in the absence of carina on clypeus and in having the petiole more narrowed above and from all three species by its much lighter color.

8a. PONERA BIROI Emery, subsp. RUGOSA, subsp. nov.

Worker. Length 3–3.5 mm.

Head a fourth longer than broad, a little narrowed in front, sides feebly convex, posterior corners narrowly rounded, occipital border concave. Mandibles elongate, their blades with eight unequal triangular teeth. Clypeus narrowly and shallowly concave at middle of anterior border. Antennal scapes extending five sixths the distance to occipital corners; first funicular joint as long as the second and third together; joints 2–10 slightly transverse, terminal joint thick, as long as the two preceding joints. Eyes composed of 4–5 facets, situated at anterior fourth of sides of head. Thorax elongate, slightly convex above, promesonotal impression distinct, mesoëpinotal impression obsolete. Pronotum a little broader than long. Epinotal declivity flat, obtusely margined at sides, the margin with a broadly rounded angle at middle. Petiolar node in profile with nearly straight anterior and posterior surfaces, rounded above, the top about one half as long as the base; from above, much broader than long and rounded at sides.

Head and thorax opaque.

Feebly shining. Mandibles, gaster, and appendages shining. Mandibles with distinct, separated punctures. Head, thorax, and epinotum densely cribrately punctate, petiole and gaster more shallowly punctate.

Pruinose pubescence rather abundant, fine scattered erect hairs sparsely distributed on head, body, and appendages.

Dark reddish brown to black. Legs lighter.

Viti Levu: Nadarivatu.

Near *P. perkinsi* Forel from Hawaii, but larger, more robust and more coarsely sculptured. There is a faint depression at the meso-epinotal suture, which does not, however, break the sculpture and is not as distinct as in *perkinsi*. The occiput is distinctly concave. Because of these characters it is related to *biroi* Emery, a New Guinea form, from which it differs in having the head more strongly cribrately punctate and the joints of the funiculus only slightly broader than long. *Type.*— M. C. Z. 8,687.

9. PONERA TURAGA,[1] sp. nov.

Worker. Length 3.25–3.75 mm.

Head distinctly longer than broad, occipital border rather strongly and narrowly concave. Mandibles elongate, their blades with 8–9 irregular teeth. Clypeus projecting and rounded at middle of anterior border. Antennal scapes extending six sevenths the distance to occipital corners; first funicular joint longer than the second and third together, joints 2–7 as long or slightly longer than broad, the remaining joints, except the terminal, a little broader than long, terminal joint thick and shorter than the two preceding joints together. Eyes composed of eight ommatidia, situated at anterior fifth of sides of head. Thorax robust, promesonotal suture strong, mesoëpinotal impression barely discernible. Declivous portion of epinotum flat, roundly margined at sides. Petiolar node from above two and one half times as broad as long, straight in front and behind and rounded at sides; in profile thick,

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[1] "Turaga" (Fijian) — Chief.

subquadrate, with flat anterior and nearly flat posterior surfaces, broadly rounded above. First gastric segment truncate in front.

Very feebly shining. Mandibles sparsely punctate and shining. Head rather strongly, the thorax feebly rugulosely punctate. Petiole and gaster densely and regularly, though shallowly punctate.

Fine, recumbent, yellow pubescence abundant on head, body, and appendages.

Color light ferruginous, throughout.

Female. Length 4 mm.

Differing from the worker in having the petiole a little narrower in profile. The eyes are large and moderately convex, situated at the anterior third of sides of head.

Viti Levu: Nadarivatu (Type-locality), Waiyanitu. Taviuni: Somo Somo, Nagasau. Kadavu: Buke Levu, Vanua Ava.

A distinct species in its large size and light color; rugulose head, narrowly and rather strongly concave behind, and elongate funicular joints, which characters separate it from *biroi* Emery the species most nearly related. *P. turaga* is widespread in distribution but not common. *Type.*— M. C. Z. 8,688.

10. PONERA COLAËNSIS, sp. nov.

Worker. Length 2.25 mm.

Head subquadrate, longer than broad, sides nearly straight, occipital border broadly and very shallowly concave. Mandibles with three stout, triangular teeth on apical half and a row of 5–6 small denticules posterior to these. Clypeus rounded at anterior border. Antennal scapes not quite attaining occipital corners; funicular joints 2–6 strongly transverse, 7–11 slightly transverse, terminal about as long as the two preceding joints together. Eyes distinct, though very small, composed of three facets, situated at anterior fifth of sides of head. Thorax flat above, promesonotal impression distinct, mesoëpinotal, obsolete above. Pronotum broader than long and rounded at sides. Mesonotum constricted at sides. Base of epinotum narrow, basally broadened at apex, sides nearly straight; discal surface of declivity broader than long, flat, distinctly margined at sides. Petiole from above more than three times as broad as long, with rounded front and side and concave posterior border; in profile, straight in front, concave behind, highest at anterior angles, with the dorsal surface moderately convex; distinctly margined at sides.

Shining except head and prothorax which are subopaque. Mandibles with a few very sparse punctures. Head densely and cribrately punctate, thorax and petiole more shallowly and gaster more coarsely punctate than the head.

Erect hairs short and very sparse on head, body, and antennae; fine, short, silky, yellow pubescence abundant.

Reddish brown, legs and apical third of antennal funiculus brown-yellow.

Viti Levu: Waiyanitu.

Described from a unique worker. Near *P. selenophora* Emery from New Guinea, from which it differs in the longer head with less arcuate sides, and in the singularly coarse sculpture of the gaster. The regular, separated punctation of the thorax is peculiar, resembling that of *Rogeria epinotalis* Mann from the Solomons.

11. Ponera monticola, sp. nov. Fig. 5.

Worker. Length 2.25 mm.

Head a third longer than broad, slightly narrowed in front, sides feebly convex, occipital angles broadly rounded, border truncate.

Mandibles elongate, with 8–9 small teeth, the anterior three acute, the others blunt. Clypeus strongly convex at middle, rounded at anterior border. Antennae slender, their scapes attaining occipital border; first funicular joint as long as the second and third joints together, joint 2 a little longer than broad, 3–10 scarcely broader than long, terminal joint distinctly longer than the two preceding together. Eyes small, of 4–5 ommatidia, situated at anterior fourth of sides of head. Thorax elongate, nearly flat above, promesonotal and mesoëpinotal sutures distinct, but not profound. Mesonotum nearly circular, a little broader than long and half as long as pronotum. Base of epinotum twice as long as broad and as long as the declivity, which is flat and margined at sides. Petiole distinctly broader than epinotum, the dorsal surface from above twice as broad as long; in profile more than twice as high

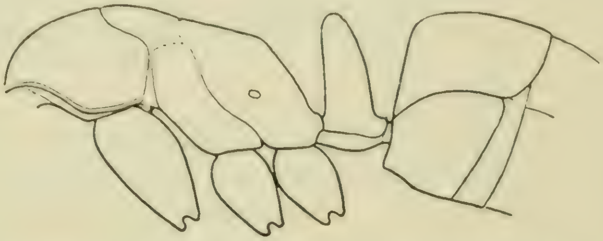

Fig. 5.— Ponera monticola Mann. Worker. Lateral view of thorax and petiole.

as long, narrowed and rounded above, with convex anterior and flat posterior surfaces. Legs long and slender.

Shining throughout. Mandibles with a row of fine punctures parallel to edge of blade. Head and body very finely punctate.

Pubescence of head and thorax fine, short, and erect, that of gaster more abundant, longer, and recumbent. Erect hairs fine, short, and exceedingly sparse.

Reddish brown, antennae and legs lighter.

Viti Levu: Nadarivatu. (Type-locality). Ovalau: Levuka.

Occurs in small colonies beneath stones and in rotten wood.

Resembles *P. kalakauae* Forel from Hawaii. *Type.*— M. C. Z. 8,689.

The two species may be distinguished as follows:—

First funicular joint as long as the three following joints together. Eyes composed of 7–8 facets. Base of epinotum broader behind than in front. Mesonotum nearly as long as pronotum.....................*kalakauae* Forel.

First funicular joint not as long as the three following together. Eyes of 4–5 facets. Mesonotum barely more than half as long as pronotum. Base of epinotum as broad in front as behind. Petiole higher......*monticola* Mann.

12. Leptogenys (Lobopelta) letilae, sp. nov. Fig. 6.

Worker. Length 6–7 mm.

Head a little longer than broad, slightly broadest in front, posterior corners broadly rounded, occipital border nearly straight. Mandibles slender, with the apical and basal borders rounding into each other, the former edentate and slightly concave. Clypeus flattened apically, projecting and narrowly rounded at middle of apical border, with a delicate projecting spine; the median carina strong and acute at basal half and becoming feebler apically. Antennae slender, their scapes surpassing occipital corners by nearly one fourth of their

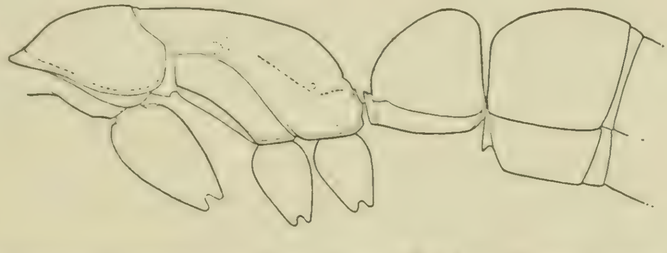

Fig. 6.— Leptogenys (Lobopelta) letilae Mann. Worker. Lateral view of thorax and petiole.

length; funicular joints all much longer than broad, gradually decreasing in length toward apex, terminal joint shorter than the next two joints together. Eyes convex, situated at a distance from base of mandibles equal to 1½ times their diameter. Pronotum about as broad as long. Mesoëpinotum without trace of suture, three times as long as broad and evenly rounding into the short, flat declivous portion. Petiole from above longer than broad, narrowed and rounded in front, straight behind; in profile about as long as high, with the anterior and posterior surfaces together forming an even arc, posterior surface with a shallowly concave disc. Gaster and legs slender.

Shining. Mandibles with several coarse punctures. Sides of clypeus irregularly and coarsely striate. Head with coarse punctures, which are regular and separated on the occiput, vertex, and upper portion of front, but become confluent and interspersed with irregular striae on the anterior portions of head inward from the eyes. Punctation of thorax and abdomen distinct and regular, though much finer than that of head.

Very fine and silky erect hairs moderately abundant on head and body and shorter and stiffer ones on appendages.

Jet black; appendages and apex of gaster ferruginous.

Female. Length 7 mm.

Ergatoid. Differing from the worker only in the greatly enlarged gaster and the shape of the petiole which in profile is much higher than long, with distinct dorsal and anterior surfaces, the latter impressed basally. The mesoëpinotal suture is feebly indicated.

Male. Length 6 mm.

Head, excluding eyes, longer than broad, rather broadly rounded behind. Mandibles elongate, spatulate. Clypeus carinate at middle, sloping on either side, broadly rounded in front. Antennal scapes more than half as long as eyes; first funicular joint thicker than the second and about a third as long, remaining joints cylindrical, elongate, gradually decreasing in length toward apex, terminal joint one and one third times as long as penultimate. Eyes occupying four fifths of sides of head. Ocelli very large. Thorax robust. Mayrian and parapsidal furrows very strong. Scutellum convex. Petiole similar to that of worker, but proportionately longer and impressed at middle of dorsoposterior border. Gaster long and slender.

Shining and finely punctate throughout.

Black. Legs and antennae (except the scapes) brown. Wings hyaline, with brown veins and stigma.

Viti Levu: Nadarivatu.

Occurs in small colonies of which I found numbers, generally beneath logs or stones. Each of the four colonies contained a single female.

The species is very distinct in the structure of the petiole. *L. punctata* Emery, from New Caledonia, nearly related, has similar sculpture but the petiole is different and the antennal scapes much shorter. *Type.*— M. C. Z. 8,690.

13. LEPTOGENYS (LOBOPELTA) FOVEOPUNCTATA, sp. nov.

Worker. Length 8.5 mm.

Head distinctly longer than broad, broadest in front, posterior border straight, sides very slightly convex. Mandibles rather thick, their blades concave. Clypeus broadly triangular, at middle sharply carinate for entire length. Antennal scapes surpassing occipital corners by about one fourth their length. Eyes large, moderately convex, situated at sides of head well in front of middle. Thorax stout. Pronotum broader than long. Meso-epinotum slightly arcuate in profile, broadly rounding into the epinotal declivity. Petiole in profile about as long as high, flattened in front and behind, feebly concave above, highest behind; from above a little longer than broad, moderately narrowed in front.

Head, thorax, and petiole subopaque; legs and gaster shining. Mandibles very coarsely punctate. Head, thorax, and petiole foveolately punctate, the punctures more dense on the head, those on the upper surfaces of petiole connected by shallow grooves. Gaster, legs, and antennae finely, though distinctly punctate.

Pilosity long, fine, and abundant on head, body, and appendages.

Black; tip of gaster, mandibles, antennal insertions, and the funiculi reddish brown.

Vanua Levu: Suene.

Described from two workers.

Related to *letilae* but is larger and stouter and different from the other Fijian species in the coarse foveolate sculpture of the thorax and epinotum.

14. LEPTOGENYS (LOBOPELTA) HUMILIATA, sp. nov.

Worker. Length 3.75 mm.

Head subquadrate, elongate, not appreciably broader in front than behind, sides subparallel, posterior corners rounded, border straight. Mandibles slender, their apical border edentate, concave and separated from basal border by a distinct angle. Clypeus strongly carinate at middle, the anterior projection rather broadly triangular. Antennae thick, their scapes surpassing occipital corners by one sixth of their length; first funicular joint the longest, second and third subequal, terminal not as long as the two preceding joints together. Eyes very small and little convex, their distance from base of mandibles more than twice their longitudinal diameter. Pronotum a little broader than long. Mesoëpinotum without suture, nearly flat above. Petiole from above subconical, broadest behind, narrowed in front, with rounded posterior corners; in profile longer than high, the dorsal surface nearly three times as long as the anterior, and rounding in front and behind into the anterior and posterior surfaces which are flat.

Very shining. Mandibles with coarse punctures. Clypeus irregularly striate. Front of head outward from antennal fossae rugulose, the remainder of head with coarse punctures and the body with regular, widely separated strong, punctures, though not as coarse as those of head.

Dark reddish brown, legs and tip of gaster lighter, antennae yellowish brown.

Viti Levu: Nadarivatu.

Described from two workers. This is a very small species, quite distinct in the shape of the head and in the very small size of the eyes. The mesoëpinotum is proportionately broader than in the related Fijian species.

15. LEPTOGENYS (LOBOPELTA) FUGAX, sp. nov. Fig. 7.

Worker. Length 5–5.5 mm.

Head distinctly longer than broad, a little broader in front than behind, with slightly convex sides, rounded corners and straight occipital border. Apical borders of mandibles concave, separated from basal borders by a rounded angle, edentate. Antennal scapes surpassing the occipital borders by about one third their length; first, second, and third funicular joints more than twice as long as broad, the remaining joints shorter and thicker, terminal joint distinctly shorter than the two preceding joints. Eyes rather large, their distance from base of mandibles about equal to their longitudinal diameter. Mesoëpinotum without impression, slightly convex above, rounding into the

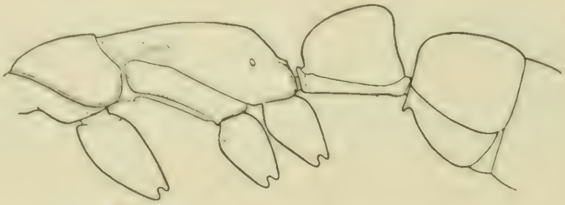

FIG. 7.— Leptogenys (Lobopelta) fugax Mann. Worker. Lateral view of thorax and petiole.

declivity. Petiole much longer than broad, narrowed in front, with the dorsal and anterior surfaces rounding into each other; in profile longer than high, and highest behind. Gaster slender.

Very shining. Mandibles punctate.

Head coarsely punctate, rugulose between frontal carinae and eyes. Clypeus with distinct scattered punctures.

Erect hairs fine and flexuous and moderately abundant on head and body, shorter on appendages.

Jet black, tip of gaster and appendages brown.

Viti Levu: Waiyanitu.

Nearest to *letilae* but very distinct in its smaller size and more elongate petiole, its longer head and more narrowly rounded clypeal projection. *Type.*— M. C. Z. 8,691.

16. LEPTOGENYS (LOBOPELTA) NAVUA, sp. nov. Fig. 8, 9.

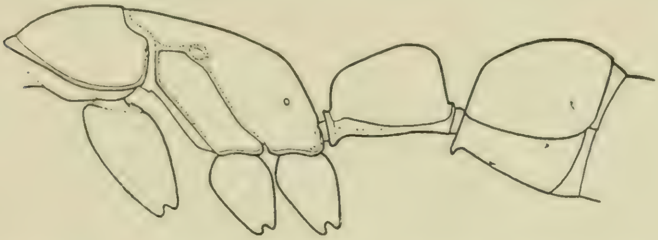

FIG. 8.— Leptogenys (Lobopelta) navua Mann. Worker. Lateral view of thorax and petiole.

Worker. Length 4.50–5 mm.

Head nearly twice as long as broad, sides nearly straight, slightly broadest anteriorly, posterior corners rounded, border straight. Mandibles concave at apical border, edentate. Clypeus elongate, triangularly produced at middle, sharply carinate for entire length. Antennal scapes surpassing occipital border by about one fifth their length, funiculus rather stout, first, second, and third joints subequal in length, remaining joints gradually decreasing in length, terminal joint scarcely as long as the two preceding joints together. Eyes small, little convex, situated at a distance from base of mandibles appreciably greater than their longitudinal diameter. Pronotum about as broad as long. Mesoëpinotum with a transverse impression near to and parallel

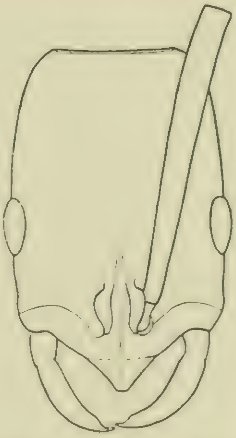

FIG. 9.—Leptogenys (Lobopelta) navua Mann. Worker. Front view of head.

with the pronounced promesonotal impression, dorsal surface feebly concave. Petiole from above subconical, broadest behind and evenly narrowed toward front, with rounded posterior corners; in profile, longer than high and highest behind, with short, abrupt anterior face, feebly convex dorsum, and short, rather concave, posterior surface. Gaster long and slender.

Very shining. Mandibles punctate. Clypeus and front of head outward from antennae rugulose and punctate, remainder of head coarsely punctate, the punctures not so close behind as in front. Thorax and abdomen with finer and more widely separated punctures.

Hairs fine, erect, abundant on head, sparse on thorax and abdomen, coarser and suberect on appendages.

Jet black, tip of gaster and appendages brown.

Male. Length 4 mm.

Differing from the male of *letilae* in its very much smaller size and in the shape of the petiole, which is proportionately longer and has the upper and posterior surfaces broadly rounding into each other and not distinct as in *letilae.*

Viti Levu: Waiyanitu.

The punctation of the head and body of the worker is stronger and more widely separated than in the other Fijian species, and the head very much longer and distinctly broadened in front. The body is slender and delicately formed.

I found this species only once. A small colony was in the ground beneath a stone in a heavily wooded gully. *Type.*— M. C. Z. 8,692.

17. Leptogenys (Lobopelta) vitiensis, sp. nov. Fig. 10.

Worker. Length 8 mm.

Head nearly twice as long as broad, broadest in front, sides feebly convex, posterior angles rounded, border straight. Basal and apical edges of mandibles broadly rounding into each other, the surface of the latter slightly convex to near tip, then a little concave, edentate. Clypeus triangular, narrow, and elongate, strongly and acutely carinate for entire length. Antennal scapes surpassing occipital border by three eighths of their length; second funicular joint the longest, remaining joints elongate, cylindrical and decreasing in length toward the tip; terminal joint a little shorter than the two preceding joints together. Eyes moderately convex, situated at a distance from base of mandibles about equal to their longitudinal diameter. Pronotum a little longer than broad. Mesoëpinotum without suture, very slightly convex above and broadly rounding into the short, flat declivous portion. Petiole very long, broadest behind, strongly narrowed in front, with a pedunculate anterior portion about twice as long as broad, posterior corners rounded; in profile, longer than high, anterior face sloping, top rounded, posterior surface flat, gaster long and slender.

Very shining. Mandibles with sparse, coarse punctures. Clypeus, cheeks, and anterior part of front densely and irregularly striate, interspersed with coarse punctures. Remainder of head and the body with regular coarse widely separated piligerous punctures, coarsest on the head. Rather short suberect hairs moderately abundant on head and body, a few scattered recumbent hairs on gaster, pubescence lacking. Appendages with stiff, suberect hairs.

Jet black; appendages dark reddish brown to black, antennae and tarsi lighter than the rest.

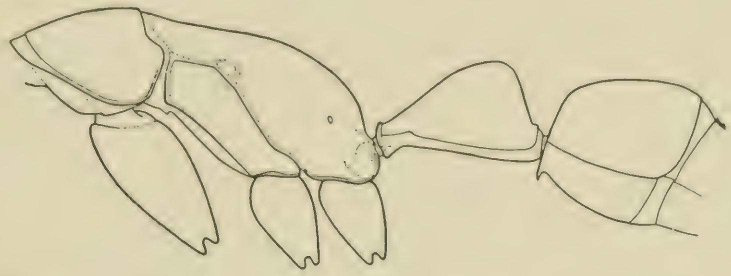

Fig. 10.— Leptogenys (Lobopelta) vitiensis Mann. Worker. Lateral view of thorax and petiole.

Viti Levu: Nadarivatu.

With the exception of *L. letilae*, which is quite abundant, the species of Lobopelta are rare in Fiji and I encountered only one colony each of *fugax, navua, humiliata*, and *vitiensis*. The latter four forms, though quite distinct from each other, belong to a group that includes also *conigera* Mayr and its variety *adlerzi* Forel from Australia, *acutangula* Emery from New Caledonia and *chinensis* Mayr, all of which have the petiole elongate. *L. vitiensis* is most nearly related to *acutangula*, but differs in having the posterior corners of the petiolar node rounded instead of angulate, and in its being much more attenuate when viewed from above.

The apical portion of the mandibles are distinctly shorter than in *conigera* and in all of the specimens before are edentate.

All of the Fijian species excepting *foveopunctata* have one type of punctation, the head is covered with strong almost foveolate punctures, the bottoms of which are rugulose. The front of the head outward from the carinae is rugulose and sometimes striate. The thorax and abdomen have regular and widely separated punctures smooth at bottom and less coarse than those of head, though moderately strong. *Type.*— M. C. Z. 8,692.

Key to the Fijian Species of Lobopelta.

Head nearly as broad as long. Clypeus moderately projecting and rather broadly rounded at middle. Petiole in profile as high as long............1

1. Thorax and petiole coarsely sculptured.........*foveopunctata* Mann

Thorax and petiole smooth and shining....................*letilae* Mann

Head much longer than broad. Clypeus longer, pointed, or narrowly rounded at middle. Petiole in profile distinctly longer than high.........2

2. Petiole from above narrowed and appearing pedunculate in front Antennal scapes surpassing occipital corners by three eighths their length, funicular joints very long and slender. Sculpture finer. Length 8 mm. *vitiensis* Mann

Petiole from above narrowed in front, but without attenuate peduncle-like portion. Antennal scapes shorter, funicular joints shorter and thicker. Sculpture coarser. Length 4–5.5 mm.............................3

3. Head subquadrate, not broader in front than behind. Eyes small, distinctly more than twice their longitudinal diameter from base of mandibles. Length 3.75 mm..................................*humiliata* Mann

Head broader in front than behind. Eyes larger, their distance from base of mandibles much less than twice their longitudinal diameter. Length 4.5–5 mm..4

4. Head nearly twice as long as broad. Distance from eyes to base of mandibles distinctly greater than the longitudinal diameter of eye. Smaller, length 4.5 mm., more slender species. Mesoëpinotum with transverse impression...*navua* Mann

Head shorter. Distance from eyes to base of mandibles about equal to longitudinal diameter of eye. Mesoëpinotum not impressed. Larger, length 5.55 mm., more robust species.......................*fugax* Mann

18. ANOCHETUS GRAEFFEI Mayr.

Verh. Zool. bot. gesellsch. Wien, 1870, **20,** p. 961, ♀.

Vitu Levu: Waiyanitu. Vanua Levu: Lasema, Suene. Taviuni: Somo Somo. Kadavu: Vanua Ava, Buke Levu.

Nests in small colonies beneath stones.

19. ODONTOMACHUS ANGULATUS Mayr. Fig. 11.

Sitz. Akad. wiss. Wien, 1866, **53**, p. 500, pl. 1, fig. 10, ☿.

Female (deälated). Length 13 mm.

Very similar to the worker, but with the usual sexual differences. The gaster is enlarged to an extent unusual in the genus. The ocelli are far apart as in the female of *hastatus*, the two lateral ones small and the median large.

Viti Levu: Nadarivatu.

This species was described by Mayr from workers collected on Ovalau. I searched for it unsuccessfully on that island as well as in numerous other localities, finally coming across it in the canyons that cut into the dry hillsides on the north slope of the mountains at Nadarivatu. A stream runs through each of these canyons and *angulatus* was always near these, sometimes foraging in situations constantly wet by spray from the waterfalls. It forages during the day time.

The nest is in the ground, sometimes beneath a stone, but more often about the roots of trees.

20. ODONTOMACHUS HAEMATODA (Linné).

Formica haematoda Linné, Syst. nat. ed. 10, 1758, **1**, p. 582, ♀.

Distributed commonly everywhere throughout the islands, even to Ono i Lau, the end of the Lau Archipelago.

21. PHEIDOLE ONIFERA, sp. nov. Fig. 12.

Soldier. Length 2.75 mm.

Head a little longer than broad, sides nearly straight, occipital angles broadly rounded, border rather broadly and not deeply concave; vertex not transversely impressed but with a narrow longitudinal sinus extended on the front almost to the frontal area. Mandibles elongate, obtusely bidentate apically. Clypeus very shallowly concave at middle of anterior border. Frontal carinae little divergent, extending beyond tips of scapes and bordering broad, shallow scrobes. Antennal scapes extending nearly two thirds the distance to occipital corners; funicular joints 2–8 little broader than long; club nearly as long as the remainder of funiculus, with the terminal joint as

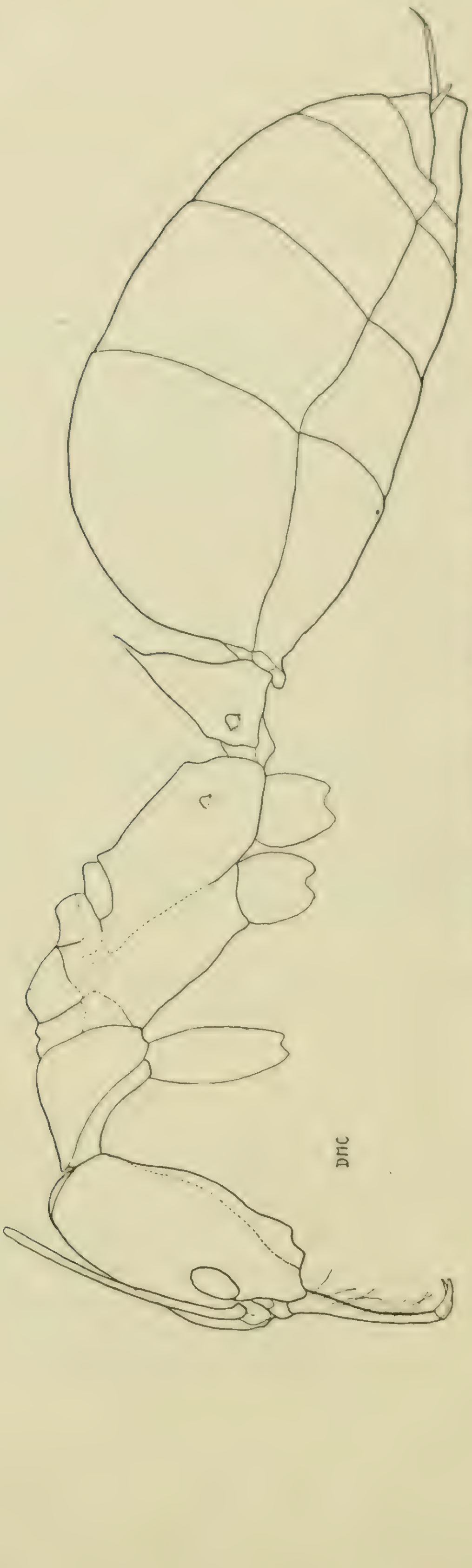

FIG. 11.— Odontomachus angulatus Mayr. Female.

long as the other two together. Eyes situated at anterior third of sides of head. Pronotum produced at sides into prominent, subacute angles. Promesonotal impression feeble. Mesonotum elevated at sides as short subconical projections. Base and declivity of epinotum equal; spines acute, straight, about as long as their distance apart at base. Petiole short, node in profile thickly cuneiform, its dorsal surface straight. Postpetiole twice as broad as petiole, twice as broad as long, rounded at sides.

Moderately shining. Mandibles finely punctate. Head with fine, longitudinal separated striae, which become indistinct behind, the spaces between and the occipital region rugulosely punctate. Thorax, epinotum, petiole, and postpetiole densely, though shallowly, punctate. Gaster finely punctate.

Erect, very fine white pilosity moderately abundant on head and body, mandibles, and appendages.

Yellow-brown; gaster and a pair of blotches on front fuscous.

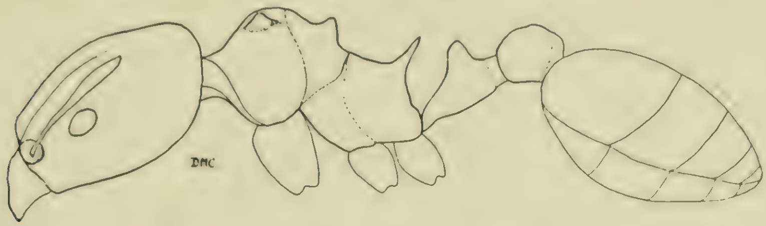

FIG. 12.— Pheidole onifera Mann. Soldier.

Worker. Length 1.5 mm.

Head a little longer than broad, narrowed in front and behind, sides convex, posterior border distinctly concave. Mandibles 7-dentate. Anterior border of clypeus straight. Antennal scapes slightly surpassing occipital corners; funicular joints 2–8 transverse. Eyes situated at middle of sides of head. Pronotum with subangulate humeri; sides at middle elevated into short elevated angulate projections; margined behind. Mesonotum margined at sides, the margins terminating as angulate elevated projections, similar to those of pronotum. Base of epinotum flat, a little longer than declivity; spines erect, divergent, acute, a little longer than their distance apart at base. Petiolar node in profile triangular, upper margin straight. Postpetiole little broader than petiole, slightly broader than long and rounded laterally.

Subopaque. Head finely striolate in front, densely punctate at sides and on occiput. Thorax sparsely and irregularly striate longitudinally and finely punctate. Epinotum densely punctate. Nodes and gaster shining and very finely punctate.

Fine erect hairs moderately abundant on head, body, and appendages.

Yellowish brown throughout.

Viti Levu: Nadarivatu. (Type-locality). Ovalau: Levuka. Taviuni: Somo Somo.

A distinct species, characterized by the structure of the mesonotum in the soldier and by the elevated triangular projections at sides of the pro- and mesonotum in worker.

The colonies found were small ones, situated beneath stones. *Type.* — M. C. Z. 8,694.

22. Pheidole umbonata Mayr.

Sitz. Akad. wiss. Wien, 1866, **53,** p. 510, ☿ ♂ (excl. ♀ ♃). Verh. Zool. bot. gesellsch. Wien, 1870, **20,** p. 977, 978, ♃.

Soldier. Length 2.10–2.50 mm.

Head a little longer than broad, as broad in front as behind, sides moderately convex, occipital border broadly and, at middle, rather deeply excised, vertex not transversely impressed. Mandibles with a tooth at the angle between base and blade, bidentate at tip. Clypeus flat in front, its anterior border nearly straight. Antennal scapes extending a little less than half the distance to occipital corners; first funicular joint as long as the next three joints together, joints 2–8 a little broader than long; club shorter than remainder of funiculus, its terminal joint longer than the other two together. Eyes little convex, situated at anterior fourth of head. Pronotum much broader than long, sides submargined and broadly rounded at tips. Promesonotal suture barely distinct. Mesonotum flat. Epinotum shallowly concave between the spines, the base about as long as declivity; spines triangular and acute, shorter than their distance apart at base. Petiole rather short, node in profile higher than long; above, concave at middle with the sides subconical. Postpetiole a little less than twice as broad as petiole, broader than long, broadest in front of middle, with nearly straight sides.

Moderately shining throughout. Mandibles with fine and regular setigerous punctures. Head regularly, longitudinally striate, the striae becoming obsolete on vertex; occiput smooth. Pro- and mesonotum smooth. Epinotum coarsely, though shallowly reticulate. Petiole, postpetiole, and gaster smooth.

Fine, erect hairs moderately abundant on head, body, and appendages.

Brownish yellow, gaster pale fuscous.

Worker. Length 1.25–1.50 mm.

Head slightly longer than broad, sides feebly convex, posterior corners broadly rounded, occipital border very shallowly concave at middle. Mandibles with fine elongate triangulate teeth. Clypeus straight at anterior border. Antennal scapes slightly surpassing occipital corners; funicular joints 2–8 about as long as broad. Eyes large, situated at anterior third of sides of head. Pronotum evenly rounded above and at sides. Promesonotal suture very feeble. Epinotal spines triangular and acute, shorter than their distance apart at base. Petiolar node subcuneiform, narrowly rounded above. Postpetiole slightly broader than petiole.

Shining. Cheeks longitudinally striate; head regularly and sparsely punctate; epinotum punctate as in soldier. The rest smooth.

Pilosity long, erect and rather sparsely distributed on head, body, and appendages.

Brownish yellow. Head and gaster a little darker than the rest.

Female. Length 4 mm.

Head a little broader than long; occipital border broadly and very shallowly concave. Epinotal spines triangular, not acute, their width at base greater than their length. Petiole shorter than in soldier, and less excised above.

Head longitudinally striate. Epinotal base and the posterior slope of petiolar node punctate, the remainder smooth and shining.

Pilosity and color as in soldier except that the mesothorax is dark like the gaster. Wings hyaline with veins pale brownish yellow.

Viti Levu: Nausori. Vanua Levu: Suene, Lasema, Wainunu. Taviuni: Somo Somo. Lau: Munia, Tuvuca. Vanua Mbalavu: Loma Loma.

A common widespread species, nesting beneath stones. It belongs to the *flavens* group and is characterized by the short epinotal spines, the prominently produced sides of the pronotum, and the flat mesonotum.

23. PHEIDOLE VATU, sp. nov. Fig. 13b.

Soldier. Length 2.75–3 mm.

Head one fourth longer than broad, slightly narrowed in front, anterior two thirds of sides straight, occipital angles moderately rounded, occipital angles deeply and narrowly excised at middle, vertex strongly, transversely impressed. Mandibles stout, their blades very indistinctly and obtusely dentate at base and with two stout teeth apically, and sparse, minute teeth between. Clypeus flat, rather strongly concave at middle of anterior border. Antennal scapes extending a little less than half the distance to occipital corners; first funicular joint longer than the three following joints together, joints 2–8 slightly broader than long; terminal joint longer than the two preceding joints together. Eyes small and convex, situated in front of anterior third of sides. Thorax a little more than half as broad as head. Promesonotum in profile strongly convex. Sides of pronotum produced and obtusely angulate. Promesonotal impression distinct. Epinotum with subequal base and declivity, the spines slender, straight, divergent, a little shorter than their distance apart at base. Petiolar node three times as broad as long, excised at middle. Postpetiole more than twice as broad as petiole, with strong elongate, curved projections at sides.

Mandibles finely punctate and shining. Head subopaque, front and sides longitudinally striate, scrobes cribrately punctate, vertex and occiput with fine reticulate striae and the interspaces rugulose-punctate. Thorax feebly shining, indistinctly transversely striated. Epinotum and postpetiole finely punctate. First gastric segment at base densely and finely punctate and longitudinally striate. Gaster and legs shining.

Fine, erect white hairs moderately abundant on head, body, and appendages.

Head brownish red, thorax, abdomen, and femora dark brown to black, tibiae and tarsi brownish yellow.

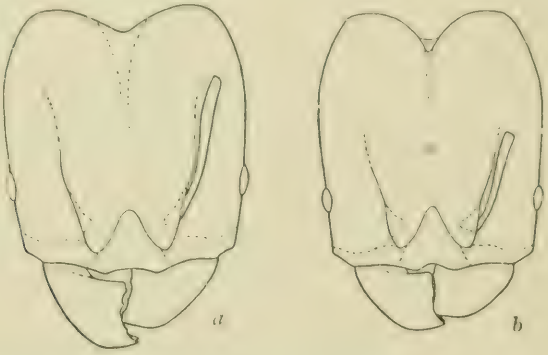

FIG. 13.— *a.* Pheidole knowlesi Mann. Soldier. Front view of head. *b.* Pheidole vatu Mann. Soldier. Front view of head.

Worker. Length 1.50 mm.

Head a little longer than broad, as broad in front as behind, sides convex, posterior border very feebly concave. Mandibles with six unequal teeth. Clypeus straight at middle of anterior border. Antennal scapes surpassing occipital corners by less then their diameter at tips; funicular joints 2–8 transverse; club as long as remainder of funiculus, with the terminal joint as long as the other two together. Pronotum rounded at sides. Promesonotal suture not discernible. Epinotal spines divergent, nearly straight, a little shorter than their distance apart at base. Petiolar node subcuneiform, faintly impressed at middle. Postpetiole lower than petiole, less than twice as broad as long and rounded at sides.

Head opaque, the rest feebly shining. Mandibles finely striolate. Head coarsely, densely, and regularly punctate and with feeble striae on front parallel to frontal carinae. Thorax, petiole, and postpetiole superficially punctate.

Pilosity rather sparsely distributed on head, body, and appendages.

Dark reddish brown to black, head paler than the rest; mandibles, funiculi, and legs yellow-brown.

Viti Levu: Nadarivatu.

Type.— M. C. Z. 8,695.

24. PHEIDOLE WILSONI, sp. nov.

Soldier. Length 2.75 mm.

Head one fifth longer than broad, slightly narrowed in front, sides nearly straight, occipital corners broadly rounded, border narrowly and rather deeply excised at middle; vertex transversely impressed. Mandibles bidentate at tip and with an obtuse tooth at base of blades. Clypeus flat, very feebly concave at middle of anterior border. Antennal scapes extending distinctly more than half the distance to occipital corners; first funicular joint nearly as long as the three following joints together, joints 2–8 a little longer than broad; club slender, with the terminal joint as long as the two preceding joints together. Antennal scrobes broad and shallow, bordered inwardly by a narrow carina. Eyes small, little convex, situated at anterior third of sides of head. Thorax strongly arched in profile; sides of pronotum bluntly conical at middle. Base of epinotum concave at middle, roundly margined at sides, equal in length to the declivity. Epinotal spines as long as their distance apart at base, their tips rather blunt; erect, moderately divergent and extending slightly backward. Petiole elongate, the node in profile higher than long and narrowly rounded above, dorsal surface evenly rounded. Postpetiole two and one half times as broad as petiole; in profile, highest and rather narrowly rounded in front of middle, sides produced as cones, which are nearly straight and less then half as long as the width of node.

Shining. Mandibles sparsely and very finely punctate. Front with longitudinal rugae, which become finer and reticulate on vertex. Cheeks with finer and more dense rugae. Vertex rugulose. Occiput very reticulately rugulose and with sparse, coarse punctures. Pronotum with irregular, transverse striae. Epinotum and anterior and posterior faces of petiolar node and postpetiole shallowly punctate. Gaster finely and regularly punctate.

Erect hairs long and silky, moderately abundant on head, body, and appendages.

Color very dark brown; anterior portion of head, the mandibles and appendages brownish red.

Worker. Length 1.50–1.75 mm.

Head a little longer than broad, as broad in front as behind, sides feebly convex, posterior border nearly straight. Mandibles with seven fine teeth. Clypeus strongly convex basally, anterior border distinctly, though shallowly concave at middle. Antennal scapes surpassing occipital corners by a little less than one third their length; funicular joints 2–8 slightly longer than broad. Promesonotum rounded in profile, the sides broadly and subangulately produced in front of middle. Base of epinotum flat, much longer than declivity; spines longer than their distance apart at base, erect and moderately divergent. Petiolar node elevated and narrowly rounded above. Postpetiole one and one half times as broad as petiole, sides in front of middle with poorly developed angulate processes.

Shining. Mandibles finely punctate. Head coarsely cribrately punctate and epinotum shallowly so. Thorax similarly punctate except for a discal surface which lacks the punctures and bears fine transverse striae.

Pilosity as in soldier.

Color dark brown; appendages pale reddish brown.

Kadavu: Vanua Ava.

This species is near *vatu*. The soldier differs in its broader head, more narrowly excised behind, the longer antennal scapes, and in the much shorter lateral projections on the postpetiole. The worker of *wilsoni* has longer antennal scapes and the sculpture is stronger than in the same phase of *vatu*. *Type.*— M. C. Z. 8,696.

The name is in honor of Mr. T. E. Wilson of Vanua Ava.

25. PHEIDOLE CALDWELLI, sp. nov. Fig. 14.

Soldier. Length 4.50–5 mm.

Head a little longer than broad, sides moderately convex, occipital corners broadly rounded, posterior border narrowly and deeply excised; vertex transversely impressed. Mandibles bluntly toothed at base of blades, and with two coarse apical teeth. Clypeus concave, the anterior border slightly concave at middle. Frontal carinae feebly elevated, extending to tips of scapes. Scapes extending a little more than half the distance to occipital corners, narrow and strongly arcuate basally, thickened at apical third; funiculus slender, first joint as long as the three following joints together, joints 2–8 as long or slightly longer than broad; club slender, with the terminal joint as long as the other two together. Eyes small, convex, situated at anterior third of sides of head. Pro- and mesonotum strongly convex in profile; suture well defined; pronotum angulately produced at sides. Mesoëpinotal impression strong. Base of epinotum as long as the declivity, concave between the spines, which are longer than the base, thick, pointed at tips, extending upward and backward and slightly divergent. Petiole rather thick, the node in profile about as high as long, with the dorsal surface feebly impressed at middle. Postpetiole twice as broad as petiole, broader than long, broadest and subangulately produced in front of middle.

Gaster, legs, and mandibles shining, the rest feebly shining. Mandibles coarsely punctate. Cheeks and front longitudinally striate; vertex and occiput rugose; sides densely punctate and with fine striae. Pronotum transversely rugose-striate. Mesonotum, petiole, and postpetiole strongly, and the epinotum shallowly, densely punctate. Basal third of first gastric segment finely and very densely longitudinally striate-punctate.

Long erect hairs rather sparsely distributed on head and thorax, more abundant on gaster. Finer and shorter hairs on gaster, mandibles, and appendages.

Dark reddish brown to black, mandibles and legs lighter.

Worker. Length 2 mm.

Head a little longer than broad, sides moderately convex, posterior corners broadly rounded, posterior border very feebly concave at middle. Mandibles with eight unequal triangular teeth. Clypeus flat basally, finely carinate at middle of anterior half, anterior border concave at middle. Frontal carinae little elevated, rounded, subparallel, extending to about half the distance between eyes and occipital border. Eyes situated slightly in front of middle of sides of head. Antennal scapes thickened at anterior fourth, then narrowed to apex, surpassing occipital corners by one fourth. Pronotum moderately convex above, gibbous laterally at middle. Promesonotal impression weak. Base of epinotum rather flat, twice as long as declivity; spines stout, two thirds as long as the base of epinotum, moderately divergent and rather strongly curved. Petiolar node from above about twice as long as broad, sides rounded. Postpetiole twice as broad as petiole, broadest behind, with evenly rounded sides.

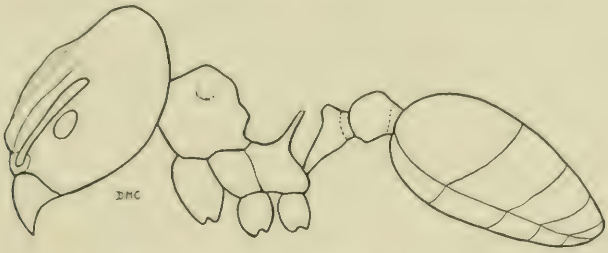

Fig. 14.— Pheidole caldwelli Mann. Soldier.

Gaster, legs, and mandibles shining, the remainder opaque. Mandibles very sparsely punctate. Cheeks and front of head with weak striae, head, thorax, petiole, postpetiole, spines, antennal scapes, and legs densely punctate; gaster very finely and densely punctate at base of first segment.

Erect, stiff, hairs rather sparsely distributed on head, body, and appendages.

Dark reddish brown; mandibles and appendages lighter.

Female. Length 5 mm.

Head very slightly broader than long. Antennal scrobes better defined than in the soldier. Epinotal spines longer than the declivity, stout basally, pointed apically.

Front and sides of head longitudinally striate; scrobes densely punctate, Mesothorax longitudinally striate. Scutellum rugose. Epinotum, petiole, and postpetiole irregularly, transversely striate. Basal third of first gastric segment finely striate and densely punctate between the striae.

Color and pilosity as in soldier.

Viti Levu: Nadarivatu.

Very common in, and apparently restricted in distribution to, the mountains about Nadarivatu, where numerous colonies were found beneath stones and logs. Near *P. vatu* Mann, but much larger, with the sides of the postpetiole merely subangulate and not extended as spinose processes. *Type.*— M. C. Z. 8,697.

26. PHEIDOLE OCEANICA Mayr.

Sitz. Akad. wiss. Wien, 1866, **53**, p. 510, ☿, ♃.

Viti Levu: Nadarivatu, Nausori, Nasoqo. Vanua Levu: Suene, Labasa, Lasema. Ovalau: Levuka. Taviuni: Somo Somo. Kadavu: Vunisea. Lau: Tuvuca. Vanua Mbalava: Loma Loma.

27. PHEIDOLE KNOWLESI, sp. nov. Fig. 13a.

Soldier. Length 3 mm.

Head one fourth longer than broad, narrowed in front, sides at anterior two thirds nearly straight, occipital corners broadly rounded, border narrowly and moderately strongly concave at middle, vertex impressed at middle, rather strongly. Mandibles rather long, their blades with three triangular teeth basally, two larger ones at apex and a series of small denticles between. Clypeus flat, very feebly concave at middle of anterior border. Frontal carinae feebly elevated, bordering shallow scrobes that extend slightly beyond tips of scapes. Scapes extending about five eighths the distance to occipital corners; first funicular joint nearly as long as the three following joints together; joints 2–8 slightly longer than broad, club moderately large, a little shorter than remainder of funiculus, terminal joint nearly as long as the other two together. Eyes small, little convex, situated at anterior third of sides of head. Promesonotal impression distinct. Sides of pronotum angulately produced; humeri rounded. Mesonotum rather flat above, declivous behind and subangulate between the two surfaces. Base of epinotum about as long as declivity; spines erect, triangular, as long as their distance apart at base. Petiole short, node in profile bluntly triangular; flat above, with the sides subangulate. Postpetiole a little lower than petiole, twice as broad as long, with sides conically produced at middle. Legs rather stout.

Shining, the thorax less strongly than head and gaster. Mandibles finely punctate. Cheeks and front with regular, parallel striae which terminate at the vertical impression. Vertex and occiput finely and sparsely punctate. Thorax and epinotum very superficially, transversely striate. Petiole, postpetiole, and gaster very finely and sparsely punctate.

Pilosity very long and unusually fine, rather sparsely distributed on head, body, and appendages.

Reddish brown, front blotched with dark fuscous; legs lighter, with basal half of femora infuscated.

Worker. Length 1.75 mm.

Head slightly longer than broad, sides feebly convex, occipital corners broadly rounded, border nearly straight. Mandibles with 8–9 unequal teeth. Clypeus with nearly straight anterior border. Antennal scapes surpassing occipital corners by about one third their length; first funicular joint as long as the three following joints together, joints 2–8 a little longer than broad; club well developed, nearly as long as the remainder of funiculus, terminal joint a little longer than the other two together. Eyes situated in front of middle of sides. Promesothorax without distinct suture, sides subangulate at middle, humeri narrowly rounded. Base of epinotum longer than declivity; spines triangular, about as long as their distance apart at base. Petiolar node narrowly rounded above, higher than the postpetiole which is broader than long and subangulate at sides.

Shining. Cheeks striate; sides of head cribrately punctate; sides of front with very sparse longitudinal striae parallel to frontal carinae. Mesonotum with very feeble transverse striae, the remainder sparsely and very finely punctate.

Pilosity similar to that of soldier.

Color dark reddish brown.

Female. Length 5.75 mm.

Head slightly broader than long, narrowed in front. Epinotal spines shorter and thicker than those of soldier. Petiole shorter and thicker than in soldier, concave above, at middle with prominently rounded sides. Postpetiole at sides strongly produced in subspiniform process which are much longer than thick.

Head strongly and regularly striate. Posterior two thirds of mesonotum delicately striate longitudinally.

Wings clear, veins and stigma fuscous.

Pilosity as in soldier.

Color dark brown to black.

Vanua Levu: Suene.

In habitus and in sculpture resembling *megacephala*, but the head of the soldier is longer and much less convex at sides, the mandibular blades are distinctly tridentate basally. In the worker of *knowlesi* the head of the worker is rather strongly punctate at the sides, instead of smooth as in *megacephala*. *Type.*— M. C. Z. 8,698.

27a. PHEIDOLE KNOWLESI Mann, subsp. EXTENSA, subsp nov.

Soldier. Length 3 mm.

Differing from typical *knowlesi* only in having the frontal striae extending beyond the transverse vertical impression and on to the vertex, with the interspaces distinctly though very finely punctate and the head more uniformly fuscous instead of reddish brown and lacking the darker blotches on the front.

Worker. Length 1.75 mm.

Very similar to that of *knowlesi,* but with the head between the frontal carinae finely and sparsely striolate longitudinally, and rather sparsely punctate.

Viti Levu: Nadarivatu (Type-locality), Nasoqo. Vanua Levu: Wainunu.

A harvesting species, very common beneath stones. It is the host of several species of clavigerid beetles.

The differences in striation between this and the preceding form, though slight, are constant in a large series before me. *Type.*— M. C. Z. 8,699.

28. PHEIDOLE (ELECTROPHEIDOLE, subgen. nov.) ROOSEVELTI, sp. nov. Fig. 15.

Soldier. Length 4.75–6 mm.

Head one fourth longer than broad, slightly broadened behind, sides nearly straight, posterior corners prominent and rounded, border deeply excised, vertex broadly impressed transversely. Mandibles thick, their blades with a small triangular tooth basally, and two very stout teeth apically. Clypeus impressed in front of middle, then elevated, with the anterior border concave at middle. Frontal carinae no stronger than the other carinae on the front and bordering very poorly defined scrobes. Antennal scapes extending a little more than half the distance to occipital corners, slender and arcuate basally, thickened at apical third; funicular joints 2–8 about twice as long as broad, club very slender, much shorter than remainder of funiculus, with the first two joints subequal and together much longer than the terminal. Eyes small and moderately convex, situated at sides of head in front of anterior third. Thorax robust, humeri obtusely angulate, gibbous at middle of sides. Mesothorax margined at sides and posteriorly by a strong elevated ridge, which extends upward and backward and is strongly excised at middle. Mesoëpinotal impression strong. Base of epinotum concave, a little shorter than the declivity; spines as long as declivity, straight, moderately divergent, thick to apical fifth where they are obliquely truncate, with the tip acuminate. Petiole elongate, gradually enlarging from base to the node, which, in profile is twice as high as long, and very strongly notched above at middle. Postpetiole more than twice as broad as petiole, broadest at middle, narrowed at sides, with the latter produced as horizontal, lamellate, broad, and bluntly angulate teeth, dorsal surface narrowly rounded at middle. Gaster broad and oval. Legs rather slender.

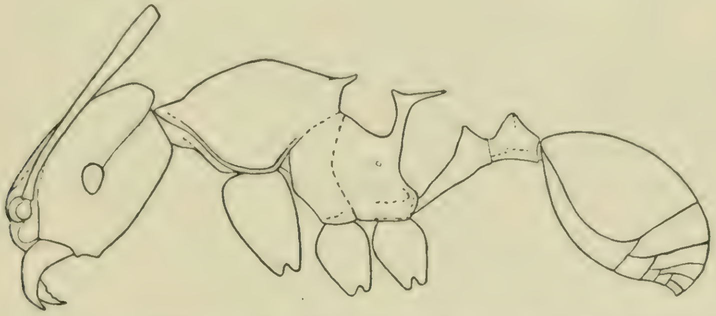

FIG. 15.— Pheidole (Electropheidole) roosevelti Mann. Worker.

Head (excepting occiput), thorax, petiole, and postpetiole moderately shining, occiput, mandibles, and legs strongly shining. Mandibles coarsely striate and punctate. Head with moderately strong carinae, which are irregularly longitudinal on front and sides and reticulate and rugose on vertex and occiput, with the intervening spaces on the latter regions rugose; scrobes reticulately rugose. Thorax coarsely reticulate-rugose. Epinotum smooth. Petiole finely and postpetiole more coarsely rugose-striate. First gastric segment regularly and rather coarsely punctate.

Fine, long, erect hairs abundant on head, thorax, and abdomen, sparser on appendages.

Dark reddish brown to black, gaster darkest, legs lighter.

Soldier. Length 2.50–2.75 mm.

Head longer than broad, sides feebly convex, sides behind eyes, occipital corners and border distinctly margined, the border narrowly concave at middle. Mandibles elongate, their blades 7-dentate, the two apical teeth long and acute, the others small, irregular, and widely separated. Clypeus convex, anterior border nearly straight. Frontal carinae short, not extending to opposite anterior border of eyes. Antennae slender, their scapes surpassing occipital corners by more than one third their length; first funicular joint slightly shorter than the second and third together, joints 2–8 more than twice as long as broad; club very slender, a little shorter than remainder of funiculus, with the first joint longer than the second and the terminal shorter than the other two together. Eyes larger and convex, situated in front of middle of sides of head. Pronotal humeri obtusely angulate. Mesonotum projecting behind horizontally as a broad, lamellate process, concave at middle of tip. Base of epinotum sloping, a little longer than declivity. Epinotal spines long, erect, bifurcate above, with the anterior projection short and angular and the posterior elongate and acute. Petiole long and slender; node narrow, cuneiform above, angulate at sides and concave at middle. Postpetiole much broader than petiole, broadest in front of middle and narrowed and sloping behind. Legs long, femora stout.

Head and thorax feebly, the rest strongly, shining. Mandibles with sparse punctures. Head rugosely punctate, with striae which are irregularly longitudinal on front and vertex and reticulate on sides, and occiput. Thorax with broken irregular transverse ridges. Epinotum, petiole, postpetiole, gaster, and legs microscopically punctate.

Fine long hairs moderately abundant on head, body, and appendages.

Reddish brown to dark brown, with the gaster darker and appendages lighter.

Female. Length 6.75 mm.

Head slightly broader than long, broadest behind, with narrowly rounded occipital corners and concave border. Antennal scapes extending five sixths the distance to occipital corners. Epinotal spines strong, shorter than the base of epinotum, concavely oblique at tip. Petiolar node narrowed above and excised at middle.

Head rugosely punctate and longitudinally striate, the striae reticulate on sides and occiput. Mesothorax strongly and regularly striate longitudinally. Scutellum rugulose. Petiole and postpetiole transversely rugosely striate. Gaster regularly punctate.

Pilosity as in soldier.

Reddish brown; gaster darker.

Viti Levu: Nadarivatu (Type-locality). Ovalau: Levuka.

Nests beneath stones and logs. The soldiers and workers are sluggish in their movements.

Named after the late Col. Theodore Roosevelt.

There is considerable variation in size and in the color of the soldiers, the heads of some being brick-red and in others almost black, but between the extremes in size and color are intermediate forms. I have based my description of the soldiers on one of the larger specimens. The smaller ones appear identical in structure and sculpture.

This species is very different from any described Pheidole in the structure of the mesonotum. The structure of the epinotal spines in the worker recalls that in *P. cervicornis* Emery from New Guinea, though in that species they are more definitely bifurcate, the prothorax also bears similar spines and the mesothorax, instead of being lamellate, is bispinose. *P. roosevelti* may be considered as belonging to a subgenus (Electropheidole) characterized by the lamellate development of the mesothorax in the soldier and worker and by the elongate, bifurcate epinotal spines and the distinctly margined head of the worker.

29. PHEIDOLE (ELECTROPHEIDOLE) COLAËNSIS, sp. nov.

Soldier. Length 4.75 mm.

Head longer than broad, sides feebly convex, occipital angles rather narrowly rounded, border narrowly and deeply concave at middle, vertex moderately impressed transversely. Mandibles short and thick, edentate. Clypeus bluntly carinate at middle of basal half, anterior border concave at middle. Antennal scapes extending more than half the distance to occipital borders and contained in narrow, though distinct scrobes; first funicular joint longer than the second and third joints together, joints 2–8 longer than broad; club slender, the terminal joint much shorter than the other two together. Eyes small, moderately convex, situated at sides of anterior third of head; median ocellus well developed. Promesothorax robust, gibbous at middle of sides, humeri obtusely angulate. Mesothorax margined at sides and produced behind as a thick plate which is concave at middle. Epinotum with subequal base and declivity; spines coarse, longer than base and obliquely truncate at tips. Petiole long and slender, the node narrowly rounded above in profile, and concave at middle of dorsal border. Postpetiole more than twice as broad as petiole, broadest a little in front of middle and angulately produced at sides. Legs rather slender.

Shining. Mandibles coarsely and regularly punctate and very minutely and sparsely striolate. Sides and front of head with moderately coarse and regular striae; upper portion of vertex, sides behind eyes, and the occipital region punctate similarly to mandibles and strongly shining. Thorax (except the impressed portion of mesonotum) irregularly striate transversely. Gaster with rather broad and shallow punctures.

Fine, erect, and long pilosity moderately abundant throughout.

Dark reddish brown to black; gaster darkest.

Worker. Length 2.5 mm.

Head a little longer than broad, sides moderately convex, posterior corners broadly rounded, border convex except at middle where it is narrowly concave, sides and posterior border of occiput with a rounded, not very prominent margin. Mandibles slender and pointed, with two large apical teeth and a series of 5–6 smaller teeth. Clypeus strongly convex basally, broadly rounded at anterior border. Antennae very slender, their scapes surpassing occipital corners by three eighths of their length; first funicular joint nearly as long as the three following joints together; joints 2–8 about twice as long as broad; club slender, the terminal joint shorter than the other two together. Eyes situated a little in front of middle of sides of head. Thorax elongate, little convex above. Mesonotum margined at sides and produced behind as a rather thick plate, concave above and excised at middle of tip. Epinotum with a pair of erect spines, longer than the base, bifurcate at tip, similar to those of *roosevelti.* Petiole elongate, the node in profile bluntly conical; from above, broader than long, with the dorsal border feebly concave. Postpetiole broader than petiole and a little broader than long; in profile about as long as high, evenly rounded above. Legs long, femora moderately enlarged.

Shining. Mandibles coarsely, sparsely punctate. Cheeks longitudinally striate; remainder of head and body with very sparse, broad, and shallow punctures.

Fine, long, erect hairs moderately abundant on head, body, and appendages.

Color as in soldier.

Viti Levu: Nadarivatu.

Described from three soldiers and several workers from a small colony found beneath a stone. It is evidently much rarer than the preceding species, to which it is related, but readily distinguished, in the soldier phase, by the characters noted in the key to the species.

The worker of *colaënsis* has the head shorter and very narrowly concave behind, with the margin rounded. The occiput is sparsely punctate, the thorax is not striate and the lamellate process of the mesonotum is thicker and not strongly impressed before the tip.

Key to Fijian Species (Soldiers) of Pheidole.

1. Mesonotum produced behind as a short lamellate plate. Epinotal spines long and erect, obliquely truncate or bifurcate at tips..............2

Mesonotum of ordinary form. Epinotal spines not truncate or bifurcate at tips..3

2. Mandibular blades concave, bidentate apically. Clypeus not carinate. Lamellate projection of mesothorax thin and strongly excised apically. Posterior portion of head rugose and reticulately striate. Ocelli absent.

roosevelti Mann

Mandibular blades convex edentate. Clypeus obtusely carinate basally. Lamellate projection of mesothorax thick and shallowly concave at tip. Posterior portion of head sparsely punctate and shining. Median ocellus well developed..*colaënsis* Mann

3. Sides of mesonotum elevated as erect triangular spines. . . .*onifera* Mann

Sides of mesonotum not elevated. 4

4. Small yellow brown species, (length 2.5 mm.); vertex not impressed transversely. Epinotal spines short. No antennal scrobes. .*umbonata* Mayr

Larger species. Vertex laterally impressed. Epinotal spines longer. Sides of head with antennal scrobes moderately or well developed. 5

5. Sides of postpetiole extended as curved spines, nearly half as long as the breadth of petiole. Clypeus strongly concave at anterior border. Antennal scapes extending distinctly less than half the distance to occipital corners. Base of first gastric segment strongly punctate and opaque. . . . . .*vatu* Mann

Sides of petiole rounded or conical. Antennal scapes extending at least half the distance to occipital corners. 6

6. Base of first gastric segment densely striate punctate. Epinotum and petiole densely punctate and opaque. . . . .*caldwelli* Mann

Base of first gastric segment smooth. Epinotum and petiole not opaque. .7

7. Large brown species (length 4–4.5 mm.). Pronotum rounded at sides. *oceanica* Mayr

Smaller, darker species. Pronotum gibbous or connate at sides. 8

8. Occipital border narrowly excised at middle. Occipital region punctate. Color black. . . . .*wilsoni* Mann

Occipital border more broadly excised. Occipital region smooth. Color brown 9

9. Striae on front of head terminating at vertical impression, leaving the vertex and occiput smooth and shining. Reddish brown; head with two fuscous blotches. . . . .*knowlesi* Mann

Striae on front extending onto the vertex. . . . .*knowlesi* subsp. *extensa* Mann

30. CARDIOCONDYLA NUDA (Mayr).

Leptothorax nudus Mayr, Sitz. Akad. wiss. Wien, 1866, **53,** p. 508, ☿.

Viti Levu: Saiaro. Vanua Levu: Lasema.

Lives in small colonies beneath stones or bark or in the ground.

31. MONOMORIUM PHARAONIS (Linné).

Formica pharonis Linné, Syst. nat., ed. 10, 1758, **1,** p. 580.

Viti Levu: Nausori.

Common in the cane-fields.

32. MONOMORIUM FLORICOLA (Jerdon).

Atta floricola Jerdon, Madras journ. litt. & sci., 1851, **17,** p. 107.

Viti Levu: Nadarivatu, Waiyanitu, Nausori. Vanua Levu: Lasema. Cicia. Ovalau: Levuka.

33. MONOMORIUM (MONOMORIUM) VITIENSIS, sp. nov.

Worker. Length 1.10–1.25 mm.

Head much longer than broad, as broad in front as behind, sides feebly convex, posterior border nearly straight. Mandibles with four triangular teeth. Clypeus very convex, rounded at anterior border. Antennae 12-jointed, slender, their scapes nearly attaining occipital corners; funicular joints 2–8 strongly transverse; club slender, much longer than remainder of funiculus, terminal joint longer than the other two together. Eyes small, situated in front of middle of sides of head. Promesothorax strongly convex. Mesoëpinotal impression strong. Base of epinotum a little longer than the declivity, submargined laterally, concave apically, with the corners unarmed and obtusely angulate. Petiolar node in profile longer than the peduncle, narrowed and rounded above. Postpetiole twice as broad as long and as broad as the petiole; in profile, lower than petiole. Gaster elongate. Legs long and slender.

Very shining. Finely punctate throughout.

Hairs rather coarse and moderately abundant on head, body, and appendages.

Pale yellow.

Taviuni: Somo Somo.

Described from a small series of workers found beneath stones on a dry hillside. *Type.*— M. C. Z. 8,700.

Monomorium talpa Emery from New Guinea and the Solomons is closely related but has the head distinctly shorter than in *vitiensis* and the antennal scapes extend beyond the occipital border.

34. SOLENOPSIS CLEPTES Mann, var. VITIENSIS, var. nov.

Worker. Length 1.25–1.50 mm.

Differing from typical *cleptes* of the Solomons in its larger size and paler coloration, being very light yellow in color with the first gastric segment strongly infuscated.

Viti Levu: Nasoqo (Type-locality), Tai Levu.

Several extensive colonies were found in small pockets in clay banks.

35. PRISTOMYRMEX MANDIBULARIS, sp. nov.

Worker. Length 2.50 mm.

Head about as long as broad, sides convex, posterior angles rounded, border broadly rounded. Basal edge of mandibles projecting at middle in the form of a broad stout triangular tooth; blades 4-dentate, third tooth distinctly smaller than the others. Clypeus flat at middle, not carinate, margined laterally, anterior border with three triangular teeth and concave between them. Frontal area distinct, suboval, impressed. Frontal carinae fine, extending about two thirds the length of scapes. Scapes almost attaining occipital corners; first and second funicular joints longer than broad, joints 3–7 transverse, subequal; terminal joint longer than the two preceding joints together. Eyes convex, situated at sides of head slightly in front of middle. Thorax robust, flat above. Pro- and mesonotum with a strong short lateral constriction between, at the sides narrowly rounded and gibbous in appearance. Base of epinotum a little broader than long, subgibbous basally at sides, concave between the spines which are rather stout, as long as their distance apart at base, directed upward and backward, with a slight curve forward and moderately divergent; declivity nearly as long as base. Peduncle of petiole about as long as node; node higher than long, with concave anterior face narrowly rounding into dorsal surface; highest at anterior end, with dorsal and posterior surfaces broadly rounding into each other. Postpetiole two times as high as long, rounded dorsally; from above subquadrate, very slightly broader behind than in front and a little broader than long.

Shining. Mandibles finely punctate. Front and sides of head and the occiput with a few large and rather shallow punctures, the rest smooth.

Long and fine erect hairs very sparse on head, thorax, and abdomen; shorter and more abundant on appendages.

Brownish red to dark reddish brown.

Viti Levu: Nadarivatu (Type-locality), Waiyanitu, Nasoqo. Taviuni: Somo Somo. Ovalau.

Nests beneath stones in small colonies. This is a characteristic species, distinct in the large strong tooth at middle of basal border of mandibles, the strongly dentate blade, the trilobed clypeus, with the median lobe triangular and nearly as large as those laterally. The surface of the thorax is uneven and might be described as broadly wrinkled, and the sculpture unusually fine and sparse. *Type.*—M. C. Z. 8,702.

POECILOMYRMA, gen. nov.

Near Podomyrma F. Smith.

Medium sized species, with moderately well-differentiated worker major and worker minor castes. Head of moderate size. Mandibles with broad, dentate blades. Clypeus moderately enlarged at middle, narrowed in front of antennal sockets, but not reduced to a mere ridge as in the Tetramorii. Antennal fossae broad, subcircular, not very deep. Frontal carinae feebly elevated, not concealing the articulation of the antennae. Eyes well developed, of medium size and strongly convex. Antennae 12-jointed, the last three joints forming a rather narrow club which is much shorter than the remainder of the funiculus. Thorax narrower than the head, arcuate in profile, dorsum without distinct sutures or constrictions, humeral angles bearing triangular teeth, inferior angles of prothorax rounded. Declivity of epinotum with two pairs of spines, the basal pair more elongate than those above. Petiole strongly pedunculate, node well developed, elongate, without ventral tooth. Postpetiole much shorter than petiole and convex above. Gaster a little broader than head, oval, with well-developed sting. Legs rather stout, anterior tibia with pectinate spur, claws simple. Head and body, except the gaster, coarsely sculptured.

Differs from Podomyrma in the more pronounced dimorphism, the complete absence of thoracic sutures, the strongly armed epinotum, the well-developed petiolar node with its lack of inferior spine, and in the 12-jointed antennae.

Genotype.— *Poecilomyrma senirewae*, sp. nov.

36. Poecilomyrma senirewae, sp. nov. Fig. 16.

Worker major. Length 5 mm.

Head about as long as broad, as broad in front as behind, with convex sides, broadly posterior corners, and straight border. Mandibles rather thick, their blades with six stout triangular teeth, the anterior two of which are longer than the other and acuminate apically. Clypeus moderately convex at middle, very faintly concave at middle of anterior border. Frontal area large, triangular, and very distinct. Frontal carinae little elevated, parallel basally rather than divergent and extending up the front as crenulate carinae. Antennal scapes extending to occipital corners; first funicular joint longer than the second, but shorter than the second and third together, second joint distinctly longer than broad and longer than the third, joints 3–8 very slightly broader than long; last three joints forming a poorly differentiated club, with the first two about one and one third times as broad as long and together a little longer than the terminal joint. Eyes convex, situated at middle of sides of head. Thorax and epinotum without sutures above, broadest and with convex sides in the pronotal region, which is broader than long and separated from mesonotum by narrow lateral incisions; humeri produced into triangular teeth, which are flat above and a little broader at base than long; mesoëpinotum broadest in front, gradually narrowing behind, rounding into the flattened declivous portion. Epinotal spines a little shorter than their distance apart at base, straight, thick, blunt apically, extending upward and backward and moderately divergent; basal spines much longer and curved, thick at apical third, slender above. Peduncle of petiole from above three times as long as broad, rather strongly margined at sides, the margin roundedly elevated at middle; node elongate oval, nearly twice as long as broad; in profile, much longer than high, with the rather straight dorsal surface elevated behind, and longer than the anterior and a little shorter than the posterior surface. Postpetiole in profile longer than high; from above, about as long as broad, with convex sides, twice as broad at posterior border as in front. Gaster egg-shaped. Sting strong. Legs long and rather stout.

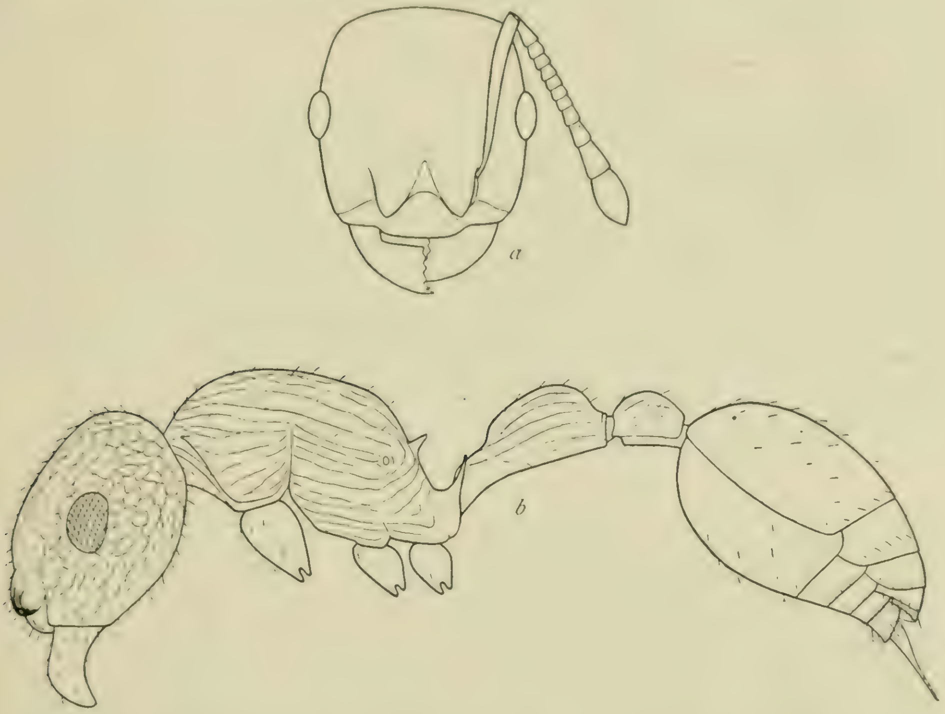

Fig. 16.— Poecilomyrma senirewae Mann. Worker. *a*. Front view of head. *b*. Lateral view.

Shining. Mandibles coarsely striate and with scattered punctures. Clypeus with nine strong striae at middle. Head, thorax, epinotum (except tip of basal portion and the declivity) with very coarse, tortuous, irregularly reticulate costae. Postpetiole smooth above, with one or two punctures at the sides and basally with finer costae. Gaster with very regular and distinct piligerous punctures and a few broad and shallow punctures.

White, erect hairs abundant, on head, thorax, petiole, and postpetiole, longer and more regularly distributed on gaster, shorter on appendages.

Color rich reddish brown, mandibles, antennae, and legs darker, gaster black.

Worker minor. Length 4 mm.

Differing from the worker major in the following characters: —

The head is distinctly longer than broad with less convex sides. The eyes are larger; the antennae are shorter, their scapes extend but little more than half the distance from eyes to occipital corners.

The sculpture of the head is finer and composed of costae, which are sparse and irregularly longitudinal on vertex and front and tortuose behind, with the interspaces pitted and, toward the sides, rugulose. The costae of the thorax and epinotum are not tortuose, but rather irregularly longitudinal.

The head, petiole, and postpetiole and lower portions of thoracic pleurae are deep black.

Viti Levu: Nadarivatu.

Described from a series taken from a small colony that was nesting in a hollow twig of a recently felled kauri tree, and a couple of individuals found on leaves. It is evidently arboreal and may, like the species of Podomyrma that I found in the Solomons, be widely distributed though locally very hard to find.

Though the color of the worker major differs from that of the worker minor it is constant in individuals of either phase and correlated by the difference in the shape of the head and in sculpture.

This beautiful species is dedicated to Senirewa, a native princess.

36a. POECILOMYRMA SENIREWAE Mann, subsp. MYRMECODIAE, subsp. nov.

Worker major. Length 5 mm.

A small series of workers found in a Myrmecodia bulb differ from typical *senirewae* in color, the head, postpetiole, and legs being black and the petiole infuscated at apical half, resembling the worker minor of *senirewae*, but differing in being as large as the worker major of that form and with a shorter head, more convex at sides.

Viti Levu: Mt. Victoria.

ARCHAEOMYRMEX, gen. nov.

Medium sized, short bodied species. Head large and broad, convex in profile, with the lateral inferior edges strongly margined. Cheeks swollen and rounded. Clypeus narrowed in front of antennal fossae, rather broad at middle, with trilobed anterior border. Mandibles large and thick. Frontal carinae short and curved, their lobes moderately elevated and rounded. Eyes rather small, situated at anterior third of sides of head. Antennae stout, 12-jointed; club elongate, 3-jointed, shorter than remainder of funiculus. Thorax without sutures, narrower than head, broad in front narrowed behind, humeri prolonged and angulate, inferior angles broadly rounded, dorsal surface flat. Epinotum with two pairs of spines at sides of basal portion; declivity distinctly broader than base and flat, margined laterally. Petiole short and thick, subquadrate, with two small, rounded projections beneath. Postpetiole broad and short, strongly margined anteriorly. Gaster very short and broad, widest behind middle of basal segment. Sting not visible. Anterior tibiae with a large and very strongly pectinate spine; middle and posterior tibiae without spurs; claws simple. Hairs long and very fine. Sculpture coarse.

Genotype.— *Archaeomyrmex cacabau*, sp. nov.

A distinct genus, which may best be referred to a new tribe, Archaeomyrmecini, between the Myrmecini and the Meranoplini, distinguished by the shape of the head, with its margined lateral inferior border, lobed clypeus, absence of antennal scrobes, the stout, flat, triangular, sutureless thorax, the armature of epinotum, the broad, flat declivity, the short, thick, non-pedunculate petiole and the short and broad gaster.

37. ARCHAEOMYRMEX CACABAU, sp. nov. Fig. 17.

Worker. Length 3.75 mm.

Head broader than long, in profile convex, sides arcuate, posterior corners rounded and rather prominent; occipital border straight at middle and rounding at sides, with an elevated margin in front extending straight and transversely across the head. Mandibles stout, the basal border enlarged apically, blades armed with two large stout triangular teeth at apex and a series of seven broad, rather tuberculate teeth along the basal three fourths. Middle of clypeus in the form of a concave lobe, broader than long and margined at sides, the margins terminating as broadly truncate projections; anterior margin concave, with a large very blunt tooth at middle, the latter minutely excised at tip. Frontal carinae short, little elevated in front, curving and forming an acute posterior margin to the antennal fossae. Antennal scapes nearly attaining occipital angles, gradually thickened apically; first funicular joint thicker than the second and a little longer than broad, second joint much shorter than the third, joints 3–8 subequal in width and transverse, gradually increasing in length toward apex, joints 9–10 longer than broad and together distinctly shorter than the terminal joint. Eyes small (composed of about thirty distinct facets), situated at anterior third of sides of head. Thorax broad, without sutures, front of pronotum narrowly margined, concave at middle, humeri projecting and bluntly angulate, surface flat, except for a very shallowly concave portion at the middle of anterior fourth, sides nearly straight, converging behind to basal portion of declivity which is less than half as broad as the front margin. Base of declivity with two pairs of triangular spines the anterior of which are less than half as long as their distance apart at base, the posterior pair a little longer and less widely separated; surface between the spines concave, strongly declivous to the declivity of epinotum which is broader than the base, twice as broad as long, flat above, with rather strong margins laterally. Petiole from above subquadrate, a little longer than broad; in profile slightly longer than high, dorsal surface flat, a little longer than posterior face, bituberculate apically, posterior face with two tubercules, similar to those above but more approximated. Postpetiole twice as broad as long, broadest in front, with the anterior border straight and elevated into a strong margin; anterior surface flat. Gaster very short and broad, first segment only visible from above, concave at basal border, broadest at posterior third. Legs stout.

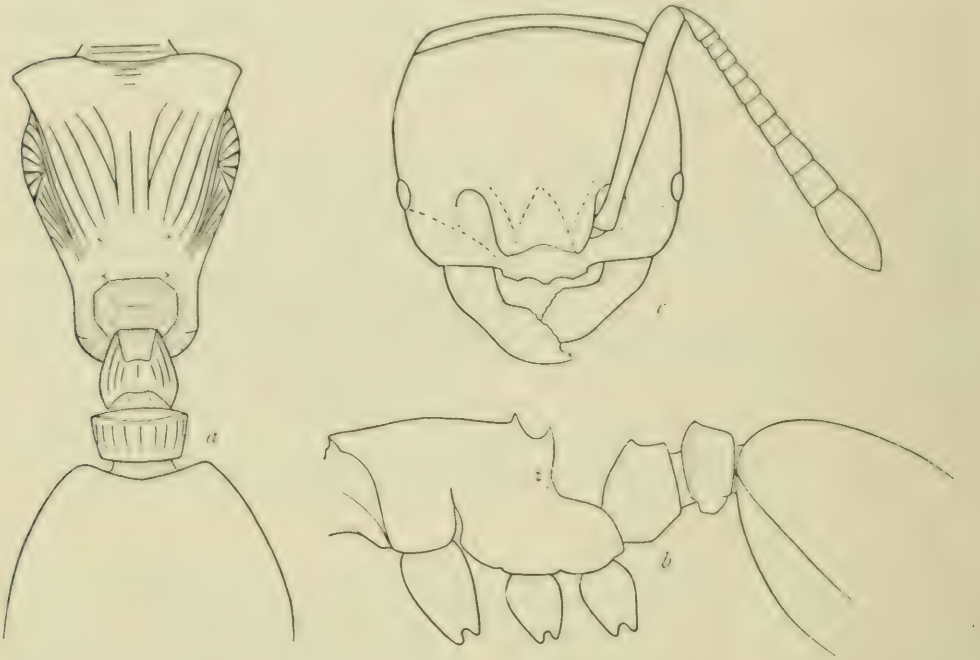

Fig. 17. — Archaeomyrmex cacabau Mann. *a*. Dorsal view of thorax and petiole. *b*. Lateral view of thorax and petiole. *c*. Front view of head.

Shining. Mandibles punctate, middle portion of clypeus very smooth and shining. Head with regular costate striae which are straight on the front and evenly curving on the sides and vertex, posterior corners smooth and shining. Thorax above with a series of eleven stronger longitudinal costae, which terminate before the front margin, leaving a transverse smooth area at anterior part of pronotum; pleurae costate similarly to dorsum. Epinotum smooth and shining. Petiole with very coarse and widely separated costae. Postpetiole more indistinctly costate. Gaster finely and sparsely punctate.

Erect hairs long and very fine and silky, abundant on head and body and equally long and abundant on antennae and legs.

Color intense black; mandibles and antennae brown, legs light brown.

Viti Levu: Nadarivatu.

Described from a unique worker found on the trunk of a tree, in some hollow portion of which it probably nests. The species is dedicated to King Cacabau.

It is a striking species, in habitus something like a small Atopomyrmex, but in structure entirely different. The sculpture strong in places and entirely lacking in other areas, the margin on the side portion of head, the four short spines on base of epinotum, the shape of the petiole, and the intense blackness of the tegument give it a characteristic appearance. The epinotal and petiolar structure are not unlike certain species of Myrmecina. The pilosity is unusually long and silky.

38a. Rogeria (Rogeria) stigmatica Emery, subsp. sublevinodis Emery.

Nova Caledonia. Zool., 1914, **1**, p. 415, ☿.

Lau: Munia. Viti Levu: Waiyanitu, Nasoqo, Nadarivatu. Vanua Levu: Lasema, Labasa. Taviuni: Nagasau, Somo Somo. Kadavu: Vanua Ava. Ovalau: Levuka.

This species, described from New Caledonia and recorded also from Samoa by Emery, occurs commonly in Fiji. It nests beneath stones on logs where some humidity is present. When the formicary is opened, the disturbed ants behave in a curious manner, secreting from the anal glands viscid matter in elongate threads that closely resemble worms. These threads twist in a life-like manner and the first time I saw them I actually took them to be small worms. The ants themselves, motionless and of the same color as the earth, were at first not visible and the twisting, apparently crawling "worms" most conspicuous. One worker secreted a thread three quarters of an inch in length, and immediately afterward another, about a half inch long.

Rogeria stigmatica Emery from the Solomon Islands has the same habits, but not as well developed.

The subspecies *sublevinodis* is larger in size and darker in color than the typical *stigmatica* and has the entire dorsal surface of the petiolar node and postpetiole shining and only feebly punctate.

39. Rogeria (Irogera) tortuosa, sp. nov. Fig. 18.

Worker. Length 3.50 mm.

Head a little longer than broad, as broad in front as behind, sides moderately convex, posterior corners broadly rounded, occipital border feebly convex, mandibles with three triangular teeth apically and four blunt teeth behind. Clypeus flat at middle, anterior border broadly rounded. Frontal carinae little broadened and flat in front, slightly divergent behind, nearly straight and extending to tips of scapes, bordering poorly defined scrobes. Antennal scapes extending four fifths the distance to occipital corners; first funicular joint as long as the second and third together, joints 2–8 strongly transverse, club slender, the terminal joint longer than the two preceding joints together. Eyes moderately convex, situated at sides of head slightly in front of middle. Promesonotum strongly convex above, the suture very indistinct; pronotum broader than long, humeri obtusely angulate, sides only slightly convex. Mesoëpinotal impression very strong. Base of epinotum strongly convex, less than half as long as the declivity, which is concave and margined laterally;

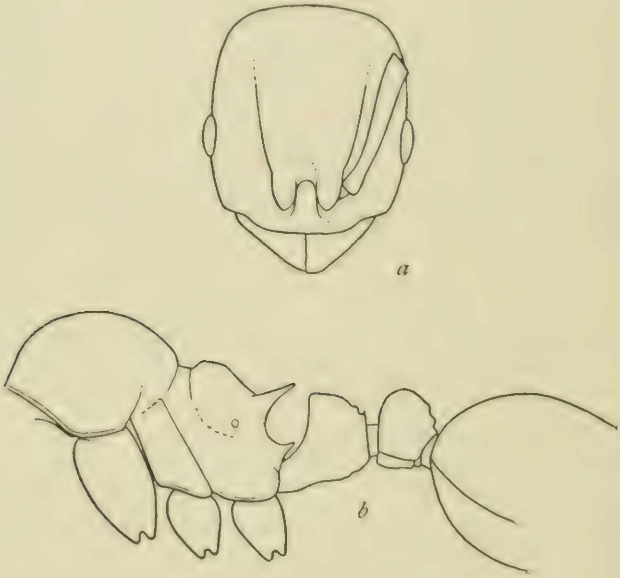

Fig. 18.— Rogeria (Irogera) tortuosa Mann. *a.* Front view of head. *b.* Lateral view of thorax and petiole.

spines broad basally, longer than their distance apart at base and divergent; inferior spines strong, elongate, triangular. Petiolar peduncle as long as the node; node in profile higher than long, highest in front, with dorsal and posterior surfaces evenly rounding into each other, anterior face declivous; from above a little broader than long and rounded at sides. Postpetiole from above slightly broader than long and a little broader in front than behind; in profile higher than long, strongly convex above.

Shining. Mandibles punctate. Clypeus smooth; front of head with a pair of costae as strong as the frontal carinae and parallel to them and between the two an equally strong, though interrupted costa; median portion with strong, though not broad, piligerous punctures, surface between eyes and antennal insertions with 9–10 oblique and somewhat arcuate, strong parallel costae; which continue in concentric curves on to the occiput. Thorax and gaster with sparse piligerous punctation. Petiole and postpetiole transversely costate, the costae in profile appearing as blunt teeth on the ventral borders. Antennae and legs punctate.

Pilosity of head and body abundant, very long and fine, that of appendages shorter and stiffer.

Dark red-brown to black, mandibles reddish, legs light reddish brown.

Ovalau: Levuka (Type-locality). Vanua Levu: Lasema, Suene.

A characteristic species, with strongly convex promesonotum, deeply impressed mesoëpinotal impression, strong epinotal spines and shining tegument. *Type.*— M. C. Z. 8,703.

This species and two following well-defined subspecies form small colonies, nesting in damp earth beneath stones on logs. I frequently noticed workers foraging on the sides of mossy stones in ravines.

39a. ROGERIA (IROGERA) TORTUOSA Mann, subsp. LEVIFRONS, subsp. nov.

Worker. Length 3.50 mm.

Differing from the typical form in the absence of costae on the front inward to the frontal carinae and in the oblique lateral costae being much more feeble.

Viti Levu: Nadarivatu (Type-locality), Waiyanitu, Vesari, Saiaro. Described from several workers. *Type.*— M. C. Z. 8,704.

39b. ROGERIA (IROGERA) TORTUOSA Mann, subsp. POLITA, subsp. nov.

Worker. Length 2.75–3 mm.

Differing from the typical *tortuosa* in the entire absence of striae on the occiput which is sparsely punctate and shining. The frontal carinae are more feeble and on the front between them are several short and weak interrupted striae.

Viti Levu: Nadarivatu.
Type.— M. C. Z. 8,705.

40. Rogeria (Irogera) striatella, sp. nov. Fig. 19.

Worker. Length 2.10–2.25 mm.

Head subquadrate, distinctly longer than broad, sides nearly straight, posterior border straight. Mandibles with six acute triangular teeth, the three apical ones larger than the others. Clypeus with flat basal and apical halves separated by an obtuse angle, anterior border rounded. Frontal area strongly impressed but not sharply outlined. Frontal carinae nearly straight, moderately divergent, as long as the antennal scapes and bordering broad, well-defined scrobes. Antennal scapes thick, extending four fifths the distance to occipital corners; funicular joints 2–8 transverse, club slender, about as long as the remainder of funiculus, with the terminal joint longer than the other two together. Eyes large, feebly convex, situated at sides of head in front of middle. Pro- and mesothorax subglobose, suture barely discernible, humeri narrowly rounded. Mesoëpinotal impression strong. Epinotum flat at base, then strongly concave and margined at sides, separated from declivity by a margined angle; declivity concave; spines about as long as their distance apart at base, strongly divergent, inferior spines short, triangular. Peduncle a little shorter than petiolar node, with a short, stout anteroventral tooth; node broader than long; in profile as long as high, highest in front.

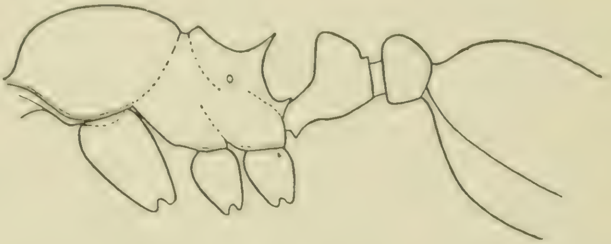

Fig. 19.— Rogeria (Irogera) striatella Mann. Worker. Lateral view of thorax and petiole.

Shining. Mandibles sparsely, very delicately striate and punctate. Front and vertex with fine, interrupted longitudinal striae, rugulose between; the striae on occiput reticulate and interspersed with large punctures; scrobe rugulose in front, nearly smooth behind. Thorax above at middle mostly smooth, but with scattered short, twisted rugulae, toward the sides rugulose. Epinotum, petiole, and postpetiole coarsely and irregularly striate transversely.

Gaster sparsely and rather coarsely punctate. Appendages with sparse punctures.

Long and fine hairs abundant on head, body, and appendages.

Black; mandibles and appendages reddish brown.

Male. Length 2.10 mm.

Head, excluding eyes, a little longer than broad, narrowed and rounded behind. Mandibles moderately well developed. Clypeus convex, anterior border very feebly rounded. Eyes large, a little less than half as long as head. Antennae 13-jointed, scapes less than half as long as head and rather thick, second funicular joint shorter than the first, as long as the third, and more than twice as long as broad, joints 4–11 gradually increasing in length, terminal joint slender, about as long as the two preceding joints together. Mesothorax with strong Mayrian and parapsidal furrows. Scutellum convex, a little broader than long, strongly declivous behind. Base of epinotum longer than the declivity, surface flat. Petiolar node evenly rounded above, from above, subcircular. Postpetiole subquadrate, broader than long; in profile rounded above. Gaster elongate. Genitalia small.

Moderately shining. Head, thorax, petiole, and postpetiole punctate, gaster more finely so.

Fine, semierect pilosity abundant on head, body and appendages.

Reddish brown, appendages lighter; wings hyaline, with pale veins and stigma.

Kadavu: Vanua Ava (Type-locality), Buke Levu. Viti Levu: Nasoqo.

Distinguished by the elongate head, with its delicate striation, and the large epinotal spines. Only one worker was found on Viti Levu but the species is abundant in parts of Kadavu, nesting beneath stones in small colonies. *Type.*— M. C. Z. 8,706.

41. Rogeria (Irogera) rugosa, sp. nov. Fig. 20.

Worker. Length 2.50–3.00 mm.

Head barely broader than long, sides convex, posterior angles broadly rounded, border nearly straight. Mandibles with three strong teeth on apical half and four small teeth on basal half. Clypeus rather strongly rounded at anterior border. Antennal scapes extending nearly four fifths the distance to occipital corners; first funicular joint longer than the second and third together; joints 2–8 strongly transverse; funicular joint much longer than the two preceding joints together. Eyes situated in front of middle of sides of head. Pronotum little convex at middle, humeri rounded. Mesoëpinotal impression strong. Base of epinotum concave, strongly margined at sides and in front; spines strong, as long as the base and much longer than the declivity, straight, divergent; inferior spines elongate and slightly curving upward. Petiolar node longer than peduncle, anterior face abrupt, dorsal surface long and sloping; from above, subquadrate, longer than broad, gibbous in front at middle and depressed behind, the depression crescent-shaped and strongly margined behind. Postpetiole broader than petiole, a little broader than long and narrowed posteriorly.

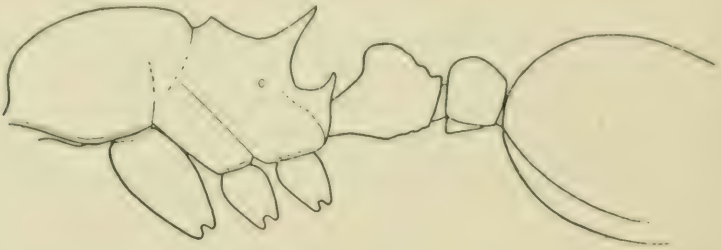

FIG. 20.— Rogeria (Irogera) rugosa Mann. Worker. Lateral view of thorax and petiole.

Head and thorax feebly, gaster strongly shining. Mandibles shining, finely punctate and, at basal half with delicate striae. Front and vertex with strong, irregular, longitudinal striae, the surface between the striae rugulose; striae of sides, scrobes, and occiput irregular, subconcentric. Pro- and mesonotum rugulose, with irregular, interrupted, longitudinal striae. Epinotum finely and superficially rugulose and shining. Petiole and postpetiole irregularly and coarsely costate, the costae on the postpetiole reticulate and enclosing foveolate pits. Gaster with fine and regular punctation.

Long and fine erect hairs abundant on body, especially the gaster. Hairs on appendages shorter and semierect.

Black, mandibles red, appendages yellowish brown.

Viti Levu: Nadarivatu.

Near *striatella* but larger and more coarsely sculptured, without well-defined antennal scrobes and with the inferior epinotal spines long and pointed, in *striatella* these are short and more rounded apically. *Type.*— M. C. Z. 8,707.

The colonies are small and live beneath stones or in the ground. The workers are very slow-moving.

Key to Melanesian Species of Rogeria.

1. Epinotal spines weak, shorter than their distance apart at base. Meso-epinotal suture feebly impressed......................................2

Epinotal spines large, longer than their distance apart at base. Mesoëpinotal impression deep and wide......................................5

2. Base of epinotum smooth and shining, inferior angles extended as short blunt teeth. Sculpture of pro- and mesonotum consisting of coarse, separated punctures. Moderately shining; color reddish.
(Solomon Islands) *epinotalis* Mann

Base of epinotum uniformly punctate and opaque; inferior angles rounded. Sculpture of pro- and mesonotum consisting of punctures and coarse striae. Opaque; color darker 3

3. Base of first gastric segment not strigate-punctate 4

4. Petiole and postpetiole punctate above (New Guinea).
stigmatica Emery

Petiole and postpetiole, in part, smooth and shining above; sculpture of head and thorax stronger. (Loyalty Islands. Samoa. Fiji).
stigmatica Emery subsp. *sublevinodis* Emery

5. Head and thorax shining; thorax not striate or rugose, but sparsely punctate; head with widely separated parallel costae or sparsely striate 6

Head and thorax rugosely striate and punctate; subopaque 8

6. Occipital region without costae ..... *tortuosa* Mann subsp. *polita* Mann

Occipital region with parallel, arcuate costae 7

7. Front with interrupted carinae inward from and parallel to frontal carinae .... (Fiji). *tortuosa* Mann

Front without carinae inward to frontal carinae.
tortuosa Mann, subsp. *levifrons* Mann

8. Larger species (length 2.50–3 mm.). Head, scarcely longer than broad with rounded sides; antennal scrobes poorly defined: inferior epinotal spines long. Sculpture coarse .... *rugosa* Mann

Smaller species (length 2.10–2.25 mm.). Head distinctly longer than broad with nearly straight sides. Antennal scrobes well defined. Inferior epinotal spines short. Sculpture fine .... *striatella* Mann

Adelomyrmex (Arctomyrmex, subgen. nov.).

Head subquadrate. Mandibles elongate, basal border short and strongly dentate in front of middle. Clypeus moderately produced at middle, the anterior border quadridentate. Frontal carinae short, moderately dilated and approximate at base. Antennae 12-jointed, short, and stout, club 2-jointed, the terminal joint very large. Promesonotal suture obsolete. Mesoëpinotal impression strong laterally, weak at middle. Epinotum with pair of spines above; inferior angles produced and rounded. Petiolar node in profile elevated, subquadrate. Postpetiole rounded, longer than petiole.

Near Adelomyrmex but differing in having the clypeus 4-dentate, and in the structure of the petiole and postpetiole. The inferior epinotal angles in Adelomyrmex are pointed, the spines are large and differently formed. In Arctomyrmex the penultimate antennal joint is smaller proportionally even than in Adelomyrmex and the club has the appearance of being one-jointed.

Genotype.— *Adelomyrmex* (*Arctomyrmex*) *hirsutus*, sp. nov.

42. ADELOMYRMEX (ARCTOMYRMEX) HIRSUTUS, sp. nov. Fig. 21.

Worker. Length 1.75 mm.

Head a little longer than broad, sides nearly straight, posterior corners broadly rounded, occipital border shallowly and narrowly concave at middle. Basal edge of mandibles with a triangular tooth a little in front of middle, blades with four small, separated teeth. Anterior border of clypeus bluntly 4-dentate. Antennal scapes extending less than two thirds the distance to occipital corners; first funicular joint longer than the three succeeding joints together, remaining joints, except the terminal strongly transverse, terminal joint very large, as long as the seven preceding joints together. Eyes flat, situated in front of middle of sides of head. Thorax moderately convex in profile. Mesoëpinotal suture strongly impressed at sides, feebly at middle. Epinotum flat, roundly margined at sides and armed with a pair of short, triangular spines; inferior angles produced and rounded. Petiole very shortly pedunculate; node from above transversely oval, less than twice as broad as

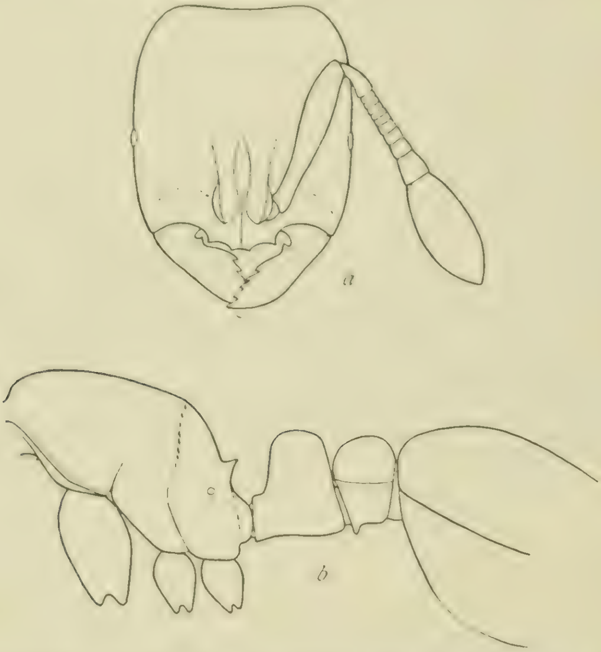

FIG. 21.— Adelomyrmex (Arctomyrmex) hirsutus Mann. Worker. *a.* Front view of head. *b.* Lateral view of thorax and petiole.

long, in profile higher than long, little narrower above than at base, with nearly straight anterior and posterior surfaces and broadly rounded dorsum. Postpetiole about as long as petiole, rounded; from above a little broader than petiole, rather narrowly rounded at sides.

Shining. Mandibles finely punctate; coarse, foveolate, widely separated punctures on head, (lacking on a narrow strip on front and vertex), thorax, (lacking on most of mesonotal disc), and abdomen, more regular on gaster than on other parts. Scapes sparsely punctate.

Head, body, and appendages with copious, long, and very fine and silky hairs, which are shorter and somewhat less abundant on the appendages.

Fuscopiceous; legs and antennae lighter.

Vanua Levu: Lasema.

Described from one worker found beneath a stone. It is evidently hypogaeic in habit.

43. Tetramorium (Tetrogmus) simillimum (Nylander).

Myrmica simillima (Nyl.). Smith, List. anim. Brit. mus. Acul., 1851, p. 118, ☿.

Taviuni: Somo Somo.

Occurs as a house-ant, probably throughout the islands.

44. Tetramorium (Tetramorium) guineense (Fabricius).

Formica guineensis Fabr., Entom. syst., 1793, **11**, p. 357, n. 31, ☿.

Throughout the islands, most commonly in cultivated districts.

45. Tetramorium (Tetramorium) tonganum Mayr.

Verh. Zool. bot. gesellsch. Wien, 1870, **20**, p. 972, 976, ☿.

Viti Levu: Waiyanitu. Vanua Levu: Lasema. Taviuni: Somo Somo.

Nests in small colonies in rotten wood. It is much less common than the following species.

46. Tetramorium (Tetramorium) pacificum Mayr.

Verh. Zool. bot. gesellsch. Wien, 1870, **20**, p. 972, 976, ☿ ♀.

Viti Levu: Nadarivatu, Waiyanitu, Nasoqo. Vanua Levu: Lasema, Labasa, Wainunu. Taviuni: Somo Somo, Nagasau. Ovalau; Levuka. Kadavu: Buke Levu.

A common species, frequently seen on leaves and tree-trunks. It nests in hollow twigs or in rotten wood.

46a. TETRAMORIUM (TETRAMORIUM) PACIFICUM Mayr, var. WILSONI, var. nov.

Worker. Length 2.75 mm.

Differing from typical *pacificum* in its color, being brownish yellow throughout, and in having the striae on front of head much finer.

Viti Levu: Nausori (Type-locality), Waiyanitu. Vanua Levu: Lasema, Suene. Kadavu: Vanua Ava.

This variety nests in rotten wood or hollow twigs.

47. TRIGLYPHOTHRIX PACIFICA, sp. nov.

Worker. Length 2–2.25 mm.

Head a little longer than broad, as broad in front as behind, sides nearly straight, occipital angles rounded, border straight. Mandibles 5-dentate. Clypeus slightly convex at middle, anterior border broadly rounded. Frontal carinae feeble, extending to tip of antennae, scrobes broad and shallow. Antennal scapes stout, extending seven eighths the distance to occipital corners; first funicular joint as long as the second and third together. Eyes large and convex, situated at sides of head in front of middle. Thorax robust, broadest at humeri, which are broadly rounded; arcuate in profile. Epinotal spines stout, straight, as long as their distance apart at base, directed backward and slightly upward. Petiolar peduncle short, node in profile longer than high, with concave anterior and slightly rounded posterior surfaces and broadly convex dorsum; from above subglobose, a little longer than broad. Postpetiole as broad as petiole, slightly broader than long; in profile higher than long, rounded above. Legs stout.

Opaque, except postpetiole and gaster which are shining. Mandibles coarsely striate. Head, thorax, epinotum, except between spines and the declivity, densely, foveolately pitted, with reticulate carinae between the pits; antennal scrobes rugose; front of head with a median carina that extends from base of clypeus one third the length of head.

Pilosity short, fine, and abundant.

Dark brown to black, appendages light reddish brown.

Female (deälated). Length 2.50 mm.

Except for the usual sexual modifications, differing from the worker only in the somewhat shorter epinotal spines and in the petiolar node being a little broader than long.

Viti Levu: Nadarivatu.

Approaches *P. striatidens* F. Smith, but is differently colored and very much more strongly sculptured, and lacks the distinct striation on front of head.

It is evidently rare, for I found only one colony, nesting beneath a stone. *Type.*— M. C. Z. 8,709.

48. STRUMIGENYS (CEPHALOXYS) VITIENSIS, sp. nov. Fig. 22c.

Worker. Length 1.4 mm.

Head short and broad, posterior corners rounded, border concave at middle. Mandibles shorter than clypeus, trigonal, their blades with about twelve very fine and acute, triangular, subequal teeth. Clypeus convex at middle, impressed at sides and in front, with the anterolateral lobes elevated and angulately margined. Antennal scapes slender at basal sixth, then strongly broadened, extending a little more than half the distance to the posterior corners; first funicular joint a little longer than the fourth and as long as the second and third together, terminal joint longer than the remainder of funiculus. Scrobes broad and deep, containing the entire antennae and divided at middle by a longitudinal carina for three fourths the length. Eyes very small, situated ventrally at middle of sides. Thorax broad, not impressed. Pronotum flat, margined at sides and front, humeri obtusely angulate. Base of epinotum nearly flat, spines absent, declivity with very high lamellate margins. Petiolar node rising abruptly from peduncle, a little higher than long and broader than long, slightly convex above. Postpetiole twice as broad as petiole.

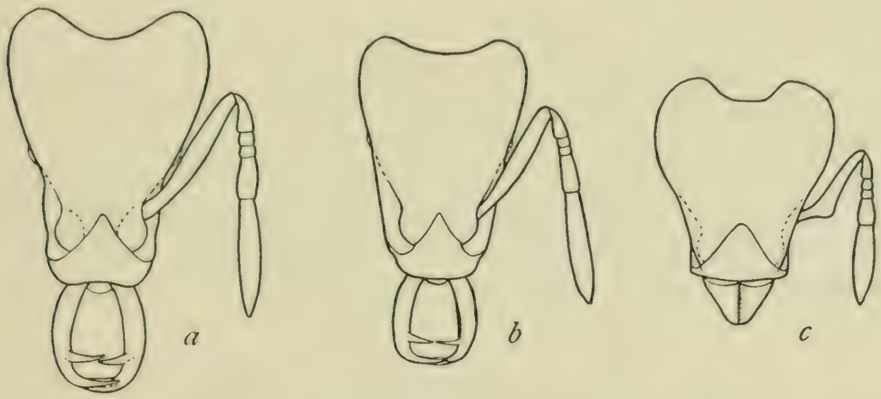

FIG. 22.— *a.* Strumigenys jepsoni Mann. *b.* Strumigenys scelestus Mann. *c.* Strumigenys (Cephaloxys) vitiensis Mann. Workers. Front views of heads.

Head subopaque, the remainder moderately shining. Head coarsely, foveolately punctate, gaster with strong basal striae, thorax finely and superficially punctate.

Spongiform processes very dense and continuous on ventral and lateral surfaces and posterior borders of petiole and postpetiole. Scapes with a series of curved club-shaped hairs on outer border, the one at the basal angle twice as long as the others. Head and thorax with exceedingly sparse microscopic hairs.

Brownish yellow, the head darker than the rest.

Vanua Levu: Lasema (Type-locality). Viti Levu: Saiaro. Lau: Lakeba.

Occurs in small colonies beneath stones. The deep scrobes, containing scapes and funiculi, the trigonal mandibles warrant, I think the resurrection of Smith's genus Cephaloxys as a subgenus to contain *S. vitiensis* and *S. capitata*.

In the structure of the head *S. vitiensis* resembles very closely *S. capitata* F. Smith, as described and figured by Emery (Ann. Mus. civ. stor. nat. Genova, 1887, **5**, p. 468, pl. 2, fig. 20, ☿) but the thorax is entirely different. In *capitata* the mesoëpinotal suture is impressed and the dorsum of the pro- and mesothorax convex, instead of being nearly flat and the humeral angles are rounded. The antennae are not as thick and the epinotum is armed with flattened spines, which are lacking in *vitiensis*. *Type.*— M. C. Z. 8,727.

49. STRUMIGENYS GODEFFROYI Mayr.

Sitz. Akad. wiss. Wien, 1866, **53**, p. 516, ☿.

Viti Levu: Nadarivatu, Waiyanitu, Tai Levu. Vanua Levu: Suene, Lasema; Taviuni: Somo Somo. Kadavu: Vunisea, Vanua Ava. Lau.

50. STRUMIGENYS JEPSONI, sp. nov. Fig. 22a.

Worker. Length 1.5–2 mm.

Head similar in shape but broader, than in *godeffroyi*. Mandibles less than half as long as head, of subequal width to near apex; armed with two long apical teeth and a third, equally long and basal to these. Clypeus concave at anterior border. Antennal scapes extending two thirds the distance to occipital corners; first funicular joint longer than the second and third together, and as long as the fourth, terminal joint a little longer than the remainder of the funiculus. Thorax not impressed at suture. Pro- and mesonotum together elongate-oval. Base of epinotum rather flat. Spines long and very slender, supporting the upper end of a very thin, spongiform lamella that borders the sides of declivity. Petiolar node a little longer than the pedicel, longer than broad; in profile, longer than high and convex above. Postpetiole transversely oval, about twice as broad as petiole.

Mandibles uniformly, shallowly punctate and shining. Head coarsely punctate and opaque. Thorax more finely punctate and with irregular longitudinal striae, subopaque. Epinotum finely punctate on anterior half of base, the rest and the petiole and postpetiole smooth and shining. Gaster with short, parallel costae basally.

Erect hairs long and flexuous, sparse on head and body; shorter curved hairs on head and thorax and at outer border of antennal scapes. Spongiform hairs forming a very thin lamella at margins of epinotal declivity and well developed on ventral and lateral surfaces and posterior borders of petiole and postpetiole.

Reddish brown.

Vanua Levu: Suene.

Described from a small series taken from beneath a stone.

The species resembles *godeffroyi* but has the head broader and the mandibles much shorter and thicker; the sculpture of the thorax is different (not striate in *godeffroyi*) and most of the epinotum and the petiole and postpetiole smooth and shining. The spongiform processes on the epinotum are very thin compared with those in *godeffroyi*.

Named in honor of Mr. F. B. Jepson, government entomologist of Fiji.

51. STRUMIGENYS SCELESTUS, sp. nov. Fig. 22b.

Worker. Length 1.75 mm.

Head moderately elongate, sides slightly and evenly concave in front, feebly convex behind, posterior corners broadly rounded, border shallowly concave. Mandibles less than half as long as head, thickest basally and narrowed toward tip, slightly arcuate, with a pair of slender apical spines, and basal to these a third long, slender spine. Clypeus flat, feebly rounded apically. Antennae stout, their scapes extending three fourths the distance to occipital corners; first funicular joint as long as the second and third together; second and third joints subequal, a little longer than broad; fourth joint as long as the first three together; terminal joint as long as the remainder of funiculus. Eyes small, situated at inferior part of sides of head, well back of middle. Thorax not impressed, in profile convex in pronotal region, flat behind. Base of epinotum narrowly margined. Epinotal spines short and very acute, extended basally as broad, lamellate margins to the epinotal declivity. Peduncle of petiole thick; shorter than node; node broader than long and a little longer than high, feebly convex above. Postpetiole about twice as broad as petiole; transversely oval.

Head, thorax, petiole, legs subopaque and densely punctate. Postpetiole and gaster shining, the latter with coarse, short striae on first segment. Mandibles moderately shining, finely punctate.

Fine, short, erect hairs moderately abundant on body and shorter curved hairs rather dense on head.

Color testaceous.

Taviuni: in mountains near lake.

Described from a single worker found beneath a stone.

Resembles *S. biroi* Emery, but differs in the shallowly concave occipital border of the head which in *biroi* is narrowly and deeply excised.

52. STRUMIGENYS NIDIFEX, sp. nov. Fig. 23.

Worker. Length (including mandibles) 3.5–5 mm.

Head broad behind, posterior border deeply excised, vertex broadly and strongly impressed transversely; front above eyes subgibbous; cheeks swollen and rounded. Base and lateral lobes of clypeus convex, anterior middle portion depressed, border strongly concave at middle. Mandibles a little more than half as long as head at middle, their blades of subequal thickness, slightly curved, with three teeth apically, the inner of which is as long as the other two and situated dorsally. Antennae slender, their scapes extending three fourths the distance to occipital corners; first funicular joint as long as the second and third together, third joint much shorter than the second; terminal joint nearly as long as the three preceding joints together. Scrobes broad and deeply impressed in front of eyes, indistinct posterior to them. Eyes rather large and convex. Thorax elongate, humeri rounded. Base of epinotum about as long as declivity, somewhat elevated, submargined at sides; spines acute, and distinctly longer than their distance apart at base. Petiole long and slender, its peduncle much longer than the node; node longer than high, abrupt in front, nearly flat above; from above, longer than broad rounded in front and at sides. Postpetiole slightly broader than long and a little less than twice as broad as node.

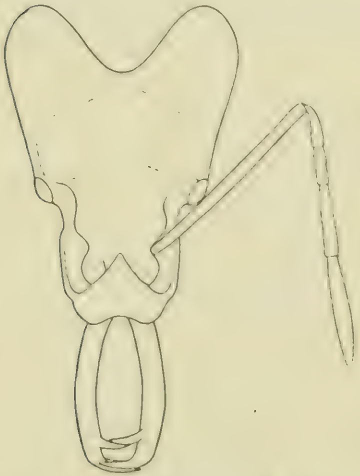

FIG. 23.—Strumigenys nidifex Mann. Worker. Front view of head.

Opaque, except gaster which is shining. Mandibles somewhat shining, shallowly punctate. Head, thorax, epinotum, petiole, postpetiole, and legs very densely punctate. Gaster striate basally.

Stiff erect hairs very sparse on head and body, and short curved hairs sparsely distributed on head, more abundant on appendages. Spongiform appendages fine on ventral surface and posterior border of petiole, stronger on postpetiole.

Dark brown. Mandibles, funiculi, and tarsi lighter.

Female. Length 5 mm.

Very similar to the worker, except in thoracic structure and in the stouter epinotal spines. The wings are clear, with fuscous veins and stigma.

Male. Length 3.90 mm.

Head, excluding eyes, much longer than broad, sides posterior to eyes slightly convex, posterior corners very narrowly rounded, border deeply excised. Mandibles well developed, acute, their blades at middle with a broad, triangular tooth. Clypeus at middle elevated into a broad carina, anterior border feebly concave. Eyes convex, about one third as long as head, situated at a distance from base of mandibles a little less than their longitudinal diameter. Antennae 13-jointed, scape shorter than eye, first funicular joint more than half as long as scape, remaining joints elongate, cylindrical and subequal, except the terminal which is one and one half times as long as the penultimate. Thorax robust. Parapsidal furrows strong. Epinotum with flattened base and declivity, concave between the spines which are reduced to blunt tubercles. Petiole slender, the node longer than broad and rounded above. Postpetiole slightly longer than broad, a little broader than the petiole. Gaster long and narrowed apically, genitalia prominent.

Head, thorax, petiole, and postpetiole densely punctate and opaque. Gaster shining, with short striae at base of apical segment. Wings densely hairy.

Dark brown.

Viti Levu: Nadarivatu (Type-locality), Waiyanitu, Vesari. Kadavu: Buke Levu.

Belongs in a group with *loriae* Emery and *chyzeri* Emery from New Guinea, resembling the latter in having the basal mandibular spine situated dorsally; *S. nidifex* differs from *chyzeri* in being much larger, the basal mandibular tooth is long and slender, similar to the terminal teeth; the thorax and petiole entirely different.

It is rather a common ant in certain localities, but the colonies are difficult to locate. The favorite nesting site is between two layers of stone, though nests were found also beneath stones and, more rarely, in rotten logs. The colonies sometimes contain upward of a hundred workers. The workers build thin walls of mud about the nest and separate small chambers by these.

A colony, which I placed with some damp earth in a jar for observation, in a few days had the sides of the jar reticulated with these walls, made from a little clay placed in the jar. *Type.*— M. C. Z. 8,710.

53. STRUMIGENYS WHEELERI, sp. nov. Fig. 24.

Worker. Length 2.75–3 mm.

Head elongate, sides in front of eyes nearly parallel, posterior angles prominent, narrowly rounded, border strongly and narrowly concave. Mandibles less than half as long as head, very slightly arcuate, with nearly parallel inner and outer borders; with two subequal, long apical teeth, bent in at right angles to the blades, and a short, acute tooth on the dorsal surface of the blade, near the base of subapical tooth. Clypeus flat, except at middle near front where it is shallowly impressed; anterior border concave at middle. Antennal scapes extending about three fourths the distance to occipital corners; first funicular joint longer than the second and third together, second and third subequal, terminal joint as long as the third and fourth together. Antennal scrobes broad, deep and well defined at anterior third, shallow basally. Eyes feebly convex, a little in front of middle of sides of head. Thorax slender. Pronotum narrowed in front, with rounded humeri, nearly twice as broad as mesonotum which is concave in profile. Epinotum armed with short, triangular spines, less than half as long as distance apart at base. Petiolar node longer than broad, rounded in front; in profile longer than high and very slightly convex above. Postpetiole twice as broad as petiole, rounded in front and at sides. Spongiform appendages present on ventral surfaces and on posterior margins of petiole and postpetiole.

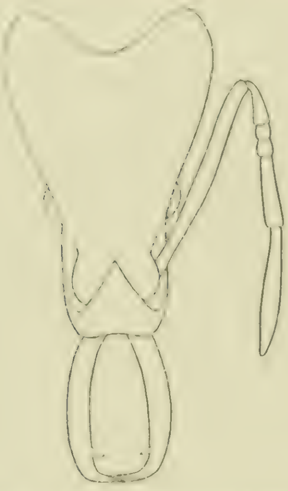

FIG. 24.— Strumigenys wheeleri Mann. Worker. Front view of head.

Opaque, gaster moderately shining. Mandibles, antennae, and legs rugulose-punctate. Clypeus, scrobes, epinotum, petiole, and postpetiole densely cribrately punctate, remainder of head and thorax punctate and rugose, the rugae of the vertex and occiput reticulate. First gastric segment with oblique striae which are coarse basally and become indistinct before the middle.

Head and body with very sparse erect hairs and a few shorter curved hairs on head and thorax, shorter curved hairs on appendages and clypeal border.

Reddish brown, the gaster darker than the rest.

Female (deälated). Length 3.10 mm.

Closely resembling the worker, with the usual sexual differences.

Viti Levu: Nadarivatu.

Described from workers and a female taken in a small colony in rotten wood.

This species resembles *feae* from Lower Burmah in its large size, and slender form, the narrow head, which is not angulate in front or impressed at vertex and in the small size of the inner mandibular tooth. The head of *feae* is somewhat broader and the sculpture entirely different, the disc of postpetiole is smooth and shining, the epinotal spines are much more slender.

Key.

1. Mandibles short, with distinct basal and apical margins, the latter with numerous fine teeth. Antennal scrobes large and broad, containing the entire antennae. Prothorax margined........................*vitiensis* Mann

Mandibles linear, with three apical teeth. Antennal scrobes less developed. Prothorax not margined....................................2

2. Large species (3–5 mm.). Dark in color..........................3

Small species (1–2 mm.). Light in color...........................4

3. Head slender, gradually narrowed anteriorly, sides not constricted at eyes, cheeks parallel. Basal mandibular tooth short. Epinotal spines short. Peduncle of petiole shorter than node........................*wheeleri* Mann

Head much broadened behind, strongly constricted at eyes; cheeks convex. Basal mandibular tooth as long as terminal teeth. Epinotal spines long. Peduncle of petiole longer than node........................*nidifex* Mann

4. Occipital border shallowly concave..................*scelestus* Mann

Occipital border deeply concave.................................5

5. Mandibles longer, slender, of subequal thickness. Petiolar node coarsely punctate and opaque above and with strongly developed spongiform hairs...*godeffroyi* Mayr

Mandibles shorter, thicker, more arcuate. Petiolar node smooth shining above and with less developed spongiform hairs...............*jepsoni* Mann

54. Rhopalothrix (Rhopalothrix) elegans, sp. nov. Fig. 25.

Worker. Length 3.75–4.25 mm.

Head, distinctly longer than broad, its transverse diameter between eyes about equal to the width at anterior border; vertex strongly impressed at sides so that the occipital corners stand out as large lobes with margin rounded at front half, then concave and with the posterior angles narrowly rounded;

posterior border broadly concave. Mandibles slender, their blades with 12–14 unequal, triangular teeth. Clypeus slightly convex, its anterior border very feebly concave. Antennae 7-jointed; basal dilation of scape narrowly rounded at outer border, about a third as broad as long; first funicular joint as long as the second and much thicker; all joints longer than broad, gradually increasing in size to the terminal, which is a little shorter than the three preceding joints together. Scrobes broad and deep. Eyes small, situated at middle of the margin that borders the scrobes. Pronotum longitudinally impressed at middle. Promesonotal suture impressed but with continuous sculpture. Mesoëpinotal impression distinct. Base of epinotum nearly flat in profile; spines stout and blunt at tip, longer than their distance apart at base, broadly lamellate basally, the lamellae continuing as margins to the declivity. Petiolar node from above longer than broad, in profile as long as high and longer than the peduncle; anteroventral tooth large, lamellate, and rounded at tip. Postpetiole twice as broad as petiole and much broader than long, strongly longitudinally impressed at middle and gibbous posteriorly on either side of impression.

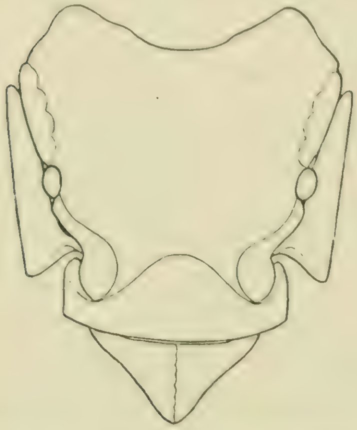

Fig. 25.— Rhopalothrix (Rhopalothrix) elegans Mann. Worker. Front view of head.

Opaque. Mandibles rugose basally. Head, thorax, petiole, and postpetiole with very coarse irregular costae, which are oblique on the front, transverse on the occiput and longitudinal on the thoracic dorsum. Base of first gastric segment with irregular costae, the rest strongly cribrate-punctate.

Body, antennae, and legs with abundant, coarse, semierect, flattened, clavate hairs; body and antennae in addition to these with sparse, longer, erect, clavate hairs.

Dark ferruginous throughout.

Viti Levu: Nadarivatu (Type-locality), Waiyanitu, Vanua Levu: Suene. Ovalau.

Described from workers taken from several colonies. It nests beneath stones or logs in the deep woods. The formicaries contain few workers. They are difficult to discern on account of their neutral color and the habit of remaining motionless when disturbed.

Rhopalothrix elegans is a very characteristic species related to *procera* Emery, from which it differs in the more pronounced occipital lobes, the elongate antennal joints, the funicular joints are transverse in *procera*, and very markedly in its sculpture, and larger size. *Type.* — M. C. Z. 8,711.

55. IRIDOMYRMEX SORORIS, sp. nov. Fig. 26.

Worker. Length 1.75–2 mm.

Head about one fifth longer than broad, moderately narrowed in front, with convex sides, broadly rounded posterior corners and nearly straight occipital border. Mandibles thick, their blades with six small triangular teeth. Clypeus roundly elevated at middle of basal half, very shallowly concave at middle of anterior border. Frontal carinae extending a little beyond anterior border of eyes. Antennal scapes barely surpassing occipital corners; funiculus stout, first and second joints nearly twice as long as broad, remaining joints, except the terminal, slightly longer than broad, terminal joint not quite as long as the two preceding joints together. Eyes large, feebly convex, situated in front of sides a little before the middle. Thorax robust. Pronotum broader than long, strongly rounded at sides, rather flat above. Mesothorax longer than broad, little convex above. Mesoëpinotal impression very strong. Base of epinotum slightly longer than broad, moderately convex, much shorter than the declivity over which the thick posterior border projects; declivity in profile concave. Node very broad and thin, as broad basally as at top, narrowly rounded above; seen from the front, the dorsal surface is broadly rounded. Gaster short, and broad.

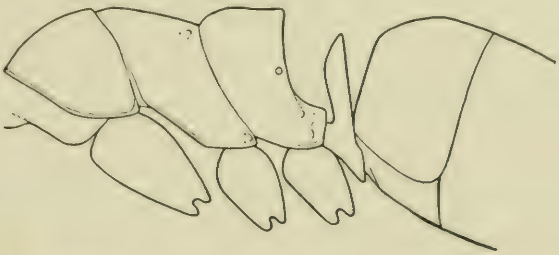

FIG. 26.— Iridomyrmex sorosis Mann. Worker. Lateral view of thorax and petiole.

Opaque, except the gaster, which in certain lights has a strong violaceous reflection. Mandibles densely punctate at basal half, more sparsely apically. Head, thorax, and epinotum very densely punctate; petiole, gaster, and legs densely but much more finely punctate.

Clypeus with a few erect hairs; gaster with a covering of microscopic recumbent pubescence.

Color black, except for the violet reflections on gaster, and the basal half of scapes and the funiculi which are reddish brown and the tarsi, which are yellowish brown.

Female. Length 4 mm.

Head similar to that of worker. Antennal scapes not quite attaining occipital corners. Eyes situated at sides of front anterior to middle; their longitudinal diameter one and two thirds times as long as the distance from anterior borders to base of mandibles. Thorax elongate. Mesothorax very slightly convex above. Scutellum about as long as broad, feebly rounded. Epinotum in profile short and convex, the base broadly rounding into the declivity. Petiole shorter and thicker than in worker. Gaster long and slender.

Moderately shining. Head densely punctate and opaque as in worker. Thorax and abdomen with dense, but minute punctures.

Erect hairs short and sparse. Very fine appressed pubescence on head, body, and legs, longest on gaster.

Color black. Funiculi and mandibles dark red-brown; tarsi brown. Wings clear, with pale brown veins and stigma.

Male. Length 1.75 mm.

Head a little broader than long, broadly rounded behind. Mandibles well developed, pointed apically, finely denticulate. Eyes a little more than half as long as head. Antennae short and thick, decreasing in thickness toward apex, 13-jointed; scapes slightly longer and more slender than first funicular joint; funicular joints 2–11 subequal, a little longer than broad; terminal joint less than twice as long as penultimate. Thorax robust. Mesonotum moderately convex. Scutellum strongly convex. Basal and declivous portions of epinotum subequal and rounding into each other. Node thickly wedge-shaped, broad and concave above and obliquely excavate behind, with narrow anterior and lateral margins and prominent angulate corners.

Shining. Densely, shallowly punctate. Pilosity short and exceedingly sparse.

Color black; gaster and legs dark reddish brown. Wings hyaline, veins and stigma pale.

Viti Levu: Nadarivatu.

Described from a large series of workers from colonies in Myrmecodia bulbs. A clavigerid beetle is harbored by this ant.

This species resembles *glaber* from Australia and its subspecies *someri* Forel from New Caledonia, but is distinct in the shape of the head which is much shorter and with more convex sides. *Type.*—M. C. Z. 8,712.

56. IRIDOMYRMEX NAGASAU, sp. nov. Fig. 27.

Worker. Length 3–5 mm.

Head longer than broad, narrowed in front and behind, sides convex, occipital corners rather narrowly rounded, border concave at middle. Mandibles with six stout triangular teeth on apical two thirds of blades, behind these, on the rounded basal part of blades, indistinctly denticulate. Clypeus nearly flat, straight at middle of anterior border. Antennal scapes slightly surpassing occipital corners; funicular joints all longer than broad, those apically becoming shorter and thicker; terminal joint not so long as the two preceding joints together. Eyes little convex, situated in front of sides of head at a distance from base of mandibles equal to more than twice their longitudinal diameter. Median ocellus distinct. Pronotum as long as broad, narrowed in front, broadest behind middle, in profile feebly convex. Mesonotum longer than broad, rather flat behind, basally with a pair of prominent spiracular tubercles. Mesoëpinotal impression deep. Base of epinotum rather flat above, a little longer than the declivity and broadly rounding into it. Petiolar node short and thick, posterior surface straight, anterior surface sloping, the top triangular and submargined. Legs long and slender.

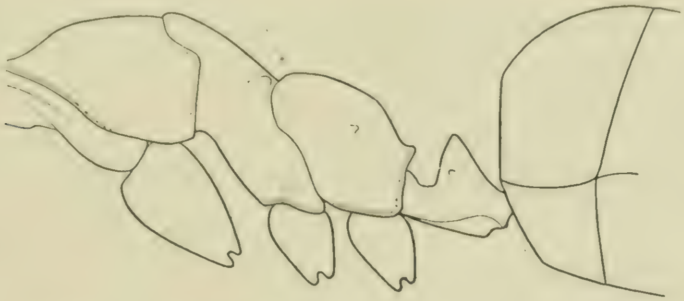

FIG. 27.— Iridomyrmex nagasau Mann. Worker. Lateral view of thorax and petiole.

Gaster shining, the remainder less strongly shining. Mandibles at basal half coarsely punctate. Head, thorax, abdomen, and appendages densely but very finely punctate, and covered with fine pubescence, which is most abundant on the head. Stiff, erect, and moderately long pilosity moderately abundant on head, body, and appendages.

Fuscopiceous, mandibles reddish; funiculus lighter; tarsi yellowish white. Pubescence yellowish; pilosity black.

Taviuni: Nagasau.

Described from numerous workers taken in the forest on the MacKenzie estate. All the colonies that I found were in the bulbs of a Myrmecodia growing on high trees and each of these plants that I was able to examine contained ants. One bulb had been left on the ground for a week, on a planter's assumption that it was an orchid, so that the ants would leave, but on examination proved to still shelter part of a large colony.

The structure of the petiole, thick basally and strongly narrowed at apical third, is distinctive. *Type.*— M. C. Z. 8,713.

56a. IRIDOMYRMEX NAGASAU Mann, subsp. ALTICOLA, subsp. nov.

Worker. Length 3.75–5 mm.

Differing from typical *nagasau* in having the basal portion of epinotum less elevated, sloping and more broadly rounding into the declivity, and in color, the head being uniformly reddish brown and the thorax somewhat lighter.

Taviuni: Nagasau, near Lake.

A series was taken from several colonies in Myrmecodia bulbs at the edge of the swamp that surrounds the crater-lake in the interior. *Type.*— M. C. Z. 8,714.

56b. IRIDOMYRMEX NAGASAU Mann, subsp. AGNATUS, subsp. nov.

Worker. Length 3–4 mm.

Differing from *I. nagasau nagasau* in its smaller size, the base of epinotum lower and more sloping (as in subsp. *alticola*) and in being brown in color, with the gaster slightly darker than the rest and the tarsi white.

Vanua Levu: Wainunu.

Described from several workers found running on tree-trunks. *Type.*— M. C. Z. 8,715.

57a. IRIDOMYRMEX ANCEPS Roger, subsp. IGNOBILIS, subsp. nov.

Worker. Length 2.75 mm.

Head a third longer than broad, narrowed in front, sides convex, posterior corners and border broadly rounded. Mandibles elongate, with six rather stout, triangular teeth. Clypeus convex, anterior border straight. Antennae slender, scapes surpassing occipital borders by about one third their length; funicular joints all more than twice as long as broad, decreasing in length toward apex, terminal joint two thirds as long as the two preceding joints together. Eyes large, and feebly convex, situated in front of sides posterior to middle of head. Pronotum longer than broad, moderately convex above. Mesonotum much longer than broad, rather flat. Epinotum in profile convex, not elevated, the base and declivity broadly rounding into each other. Node thickly squamiform, little narrowed above; seen from behind, about twice as high as broad and rounded above. Legs very long and slender.

Moderately shining. Mandibles basally with square, coarse punctures. Head, body, and appendages finely, densely, and shallowly punctate.

Erect hairs short and sparse on head and body; lacking on appendages. Short, silky, and very fine pubescence on head and body.

Fuscopiceous, tarsi lighter.

Viti Levu: Nadarivatu.

Described from three workers found on a tree-trunk.

This form differs from typical *anceps* in its smaller size, thinner petiole, shorter and less compressed femora and in the much sparser pilosity.

58. TAPINOMA MELANOCEPHALUM (Fabricius).

Formica melanocephala Fabr., Entom. syst., 1793, **2**, p. 353.

Throughout the islands.

Though one become accustomed to seeing this ant in practically every locality visited, it was a surprise to find it well established on such an isolated and barren spot as Vekai, in Lau. Vekai is merely a piece of elevated coral rock, uninhabited and seldom visited. Besides *T. melanocephalum*, *Prenolepis longicornis* was abundant on Vekai.

59. TECHNOMYRMEX ALBIPES (Smith), var. VITIENSIS, var. nov.

Worker. Length 2.5 mm.

Differing from typical *albipes* in the color of the legs which are reddish brown, with the tarsi light brown, instead of black with the tarsi white, a slight difference, but constant in a large series from many different localities on the larger islands.

Viti Levu: Nadarivatu (Type-locality), Waiyanitu, Nasoqo, Vesari, Tai Levu. Vanua Levu: Suene, Lasema, Labasa. Taviuni: Somo Somo, Nagasau. Ovalau: Levuka. Kadavu: Buke Levu.

Type.— M. C. Z. 8,716.

60. PLAGIOLEPIS FORELI, sp. nov.

Worker. Length .75–.9 mm.

Head slightly longer than broad, as broad in front as behind, sides convex, posterior border nearly straight. Clypeus broadly and bluntly carinate at middle, straight at middle of anterior border. Antennal scapes surpassing occipital corners by a distance equal to three times their diameter at tips; joints 2 and 3 of funiculus broader than long, the remainder longer than broad terminal joint as long as the three preceding joints together. Eyes large, rather flat, situated in front of sides of head a little anterior to middle. Thorax from above less than three times as long as broad, shaped as in *mactavishi* Wheeler, like an hour-glass, with the mesothorax strongly constricted. Pronotum much broader than long and broader than the epinotum. Mesonotum transversely oval. Epinotum broadened and truncated behind; in profile with base and declivity of equal length and broadly rounding into each other, the lateral margins bituberculate. Petiole small and thin, its upper border broad and nearly straight when seen from behind.

Smooth and shining.

Rather strong erect white hairs present on clypeus and gaster. Pubescence fine and moderately abundant on head and appendages.

Honey-yellow, with the posterior half of gaster infuscated.

Viti Levu: Suva.

Described from three workers.

Plagiolepis mactavishi Wheeler from the Society Islands (Moorea), is close to *foreli* but has the posterior border of head distinctly excised and the thorax more elongate.

61. Plagiolepis longipes (Jerdon).

Formica longipes Jerd., Madras journ. litt. & sci., 1851, **17**, p. 122, ☿.

Abundant throughout the islands, especially in the cultivated districts.

Some Nautilus shells which I placed in my room at Vunisea, after a week were tenanted by a populous colony of this ant, including larvae and pupae.

62. Prenolepis (Prenolepis) longicornis (Latreille).

Formica longicornis Latr., Hist. nat. fourmis, 1802, p. 113, ☿.

Abundant in all localities visited.

63. Prenolepis (Nylanderia) vitiensis, sp. nov. Fig. 28.

Worker. Length 1.75–2 mm.

Head subquadrate, slightly longer than broad, sides moderately convex, occipital border narrowly excavated at middle. Mandibles 6-dentate, the basal tooth conspicuously stouter than the others. Clypeus convex, twice as broad as long, obtusely carinate at middle, feebly and narrowly concave at middle of anterior border. Antennal scapes surpassing occipital corners by a little less than half their length. Thorax stout. Mesonotum flat, but little longer than broad. Mesoëpinotal impression broad and deep. Basal portion of epinotum convex, broad, about as long as declivity and broadly rounding into it. Node rather thick, cuneiform, moderately inclined forward.

Shining. Mandibles sparsely punctate. Front and vertex with coarse, setigerous punctures. Pilosity arranged as follows:—long and abundant on head and gaster and mixed with shorter, fine, sparse, semi-erect hairs. Prothorax with four pairs and mesothorax with two pairs of coarse hairs, the outer pairs on the pronotum shorter than the inner ones; short, erect, and fine hairs sparsely distributed on appendages.

Color brownish yellow, with the tips of antennae paler and the gaster somewhat infuscated.

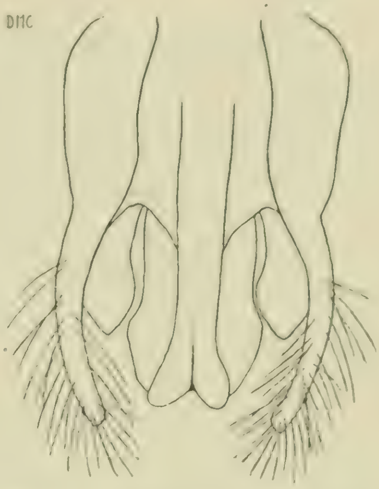

Fig. 28. — **Prenolepis (Nylanderia) vitiensis Mann. Male. Genitalia.**

Male. Length 1.80 mm.

Head, excluding eyes, distinctly longer than broad, sides in front of eyes convergent. Eyes about three times as long as their distance to base of mandibles. Clypeus convex, its anterior border very broadly and shallowly concave. Mandibles well developed, their blades distinctly denticulate. Antennal scapes surpassing occipital corners by about half their length. Thorax robust, broadest in front of wing insertions. Metanotum in profile sloping above, nearly straight, with the base a little longer than the declivous portion. Petiole low, rather thickly cuneiform, rounded above.

Genitalia with squamulae a little shorter than the stipes, nearly straight at tips; stipes elongate, curved, narrowly rounded at tips; volsellae broadly spear-head shaped; sagittae slender, with the ends narrowly rounded.

Kadavu: Vunisea.

The workers resemble some small Tongan specimens of *P. vividula* in the U. S. N. M. collection (ex Coll. Mayr.) but is readily distinguished by the difference in the hairs on the antennal scapes, which in *vividula* are very coarse and erect and in *vitiensis* fine and silky. The genitalia of the male is somewhat similar to that of *P. caledonica* Forel as figured by Emery, with the volsellae broader basally and more narrowed at tips, though because of the arrangement of the thoracic macrochaetae in the worker, *vitiensis* belongs in the *vividula* group as defined by Emery (Nova Caledonia. Zool., 1914, **1**, p. 422). *Type.*—M. C. Z. 8,717.

64. PRENOLEPIS VIVIDULA (Nylander).

Formica vividula Nyl., Acta Soc. sci. Fennica, 1846, 2, p. 900, ☿ ♀ ♂, pl. 18, fig. 2.

Viti Levu: Nadarivatu, Waiyanitu, Nausori, Tai Levu, Koro Vatu. Vanua Levu: Lasema, Wainunu, Suene. Ovalau: Levuka. Taviuni: Somo Somo, Nagasau. Kadavu: Vanua Ava. Lau: Munia, Tuvuca. Vanua Mbalavu: Loma Loma.

65. PRENOLEPIS (NYLANDERIA) BURBONICA Forel, var. BENGALENSIS Forel.

Journ, Bombay nat. hist. soc., 1894, 8, p. 406–407, ☿.

Viti Levu: Nadarivatu, Waiyanitu, Suva, Koro Vatu. Vanua Levu: Wainunu, Labasa. Ovalau: Levuka. Taviuni: Somo Somo.

This variety, which occurs also in Samoa, is exceedingly abundant throughout the larger islands.

66. PRENOLEPIS (NYLANDERIA) OCEANICA, sp. nov.

Worker. Length 1.25–1.50 mm.

Head a little longer than broad and slightly broadest behind, posterior border nearly straight. Mandibles with four strong teeth and two minute ones. Clypeus very obtusely carinate at middle, anterior border nearly straight. Eyes rather large, feebly convex, situated in front of sides at middle. Antennal scapes surpassing occipital corners by distinctly less than half their length; first funicular joint a little longer than the second and third together, remaining joints except the terminal, less than twice as long as broad. Thorax robust. Mesoëpinotal suture broadly impressed. Basal portion of epinotum in profile about one third as long as declivity. Node small and much inclined forward. Legs not very long.

Feebly shining. Mandibles striate. Body finely and shallowly punctate.

Head, body, and appendages rather thinly covered with fine, silky appressed pubescence. Macrochaetae sparse on head and gaster, and two pairs each on pro- and mesonotum and one pair on epinotum.

Color dark brown, to black, with the appendages pale brown. Pilosity yellow-brown.

Viti Levu: Nadarivatu (Type-locality), Waiyanitu.

Distinct from *minutula* Forel, with which it is related in the more robust form and the broader subquadrate head.

The Waiyanitu specimens are much lighter in color than those from the mountains and possibly represent a color variety. *Type.*—M. C. Z. 8,718.

67. CAMPONOTUS (MYRMOTURBA) MACULATUS Fabr., subsp. PALLIDUS F. Smith var.

Viti Levu: Suva, Nausori, Nadarivatu. Ovalau: Levuka. Vanua Levu: Labasa. Kadavu. Lau: Kabara.

My specimens are exceedingly close to, if not identical with var. *samoaënsis* Santschi, recently described from Samoa. All of the colonies that I found were under bark or in hollow branches, usually of the "ivi" tree. They attend a large coccid always found on this tree.

68. CAMPONOTUS (MYRMEGONIA) LAMINATUS Mayr. Fig. 29.

Sitzb. Akad. wiss. Wien, 1886, **53**, p. 489, fig. 4, ☿.

Soldier. Length 7–8 mm.

Head longer than broad, narrowed in front, sides and posterior border nearly straight, clypeal region truncated for about three fourths its length. Mandibles with seven blunt teeth. Clypeus quadrate, flattened anteriorly, the anterior border broadly rounded. Cheeks impressed broadly and more shallowly than in *cristatus*. Antennal scapes barely surpassing occipital corners. Pronotum nearly twice as broad as long, slightly convex above. Mesonotum rounded in front, and rather narrowly rounded behind. Base of epinotum compressed, most strongly so apically, where it is subangulately

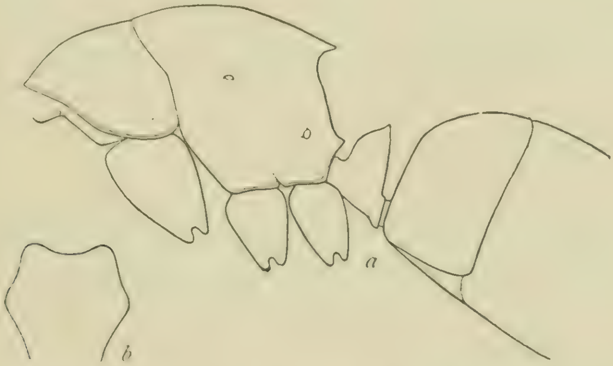

FIG. 29.— Camponotus (Myrmegonia) laminatus Mayr. Worker minor. *a.* Lateral view of thorax and petiole. *b.* Front view of petiolar node.

separated from the declivity. Petiole thick wedge-shape, posterior surface convex, anterior surface convex and sloping, top narrowed and rounded; seen from the front, straight above at middle and obliquely truncate at sides. Gaster elongate. Legs compressed.

Head strongly, the rest moderately shining. Mandibles coarsely punctate and rugulose-striate. Head and thorax very finely coriaceous; front with a few coarse, scattered punctures. Gaster transversely coriaceous-rugulose and with scattered punctures.

Sparse, erect black hairs on head and body and very short minute and sparse recumbent hairs on head, body, and appendages.

Rufocastaneous, with the head, basal bands on first and second gastric segments, lateral blotches on the second, and the tip of gaster black. Appendages rufous.

Worker. Length 5.5–6.5 mm.

Head a little longer than broad, slightly narrowest in front, sides slightly convex, posterior border broadly rounded. Clypeus moderately convex at anterior border. Antennal scapes surpassing occipital border by about three eighths of their length. Pronotum but little longer than broad. Meso-epinotum compressed and cristate above, projecting behind as a triangular tooth. Node cuneiform, convex in front, margined above and at sides. Gaster elongate.

Moderately shining, coriaceous-rugulose. Mandibles punctate and rather strongly rugose-striate.

Erect yellowish hairs sparse on head and thorax, abundant on gaster. Fine and short appressed pubescence sparsely distributed on head, body, and appendages.

Head and gaster black, the rest rufocastaneous, mandibles, antennae, and tibiae darker.

Female. Length 10 mm.

Head smaller, but otherwise similar to that of soldier. Epinotum with a short convex base that rounds broadly into the declivity. Petiole not strongly narrowed above, from above less than twice as broad as long, narrowly rounded at sides.

Sculpture and pilosity as in soldier. Head and gaster black, the rest rufocastaneous, darker than soldier.

Wings (length 9.75 mm.) clear, with brown veins.

Male. Length 6.5 mm.

Head longer than broad, cheeks subparallel, posterior border broadly rounded. Clypeus convex, its posterior border rounded. Mandibles with concave and bluntly denticulate blades. Scapes surpassing occipital borders by less than half their length.

Color dark brown to black, legs yellow-brown. Wings hyaline, veins and stigma pale brown.

Ovalau: Levuka. Viti Levu: Tai Levu, Saiaro, Nadarivatu, Navai, Waiyanitu, Nausori. Vanua Levu: Labasa. Kadavu: Vunisea, Vanua Ava.

Nests in hollow twigs.

Among the workers there is a great deal of variation in the contour of the node, which, seen from the front, may be only very slightly convex, moderately excised, or so deeply that extreme examples might be described as bidentate. The angle at the posterior edge of the epinotum varies too, from very sharp to rounded. In some specimens there is a distinct concavity just in front of the spine.

The worker minor of *laminatus* always has the epinotum more projecting behind than in *cristatus* and the head of the soldier is more strongly oblique in front. The latter character is so much like that in Colobopsis that I am sure that the species would have been placed in that subgenus had Mayr received a soldier instead of a worker.

68a. CAMPONOTUS (MYRMEGONIA) LAMINATUS Mayr, var. LEVUANUS, var. nov.

Worker. Length 6.5–7 mm.

A small series of workers differ from typical *laminatus* in having the thorax and epinotum entirely black. The gaster is unusually long and slender.

Vanua Levu: Wainunu.

69. CAMPONOTUS (MYRMEGONIA) CRISTATUS Mayr. Fig. 30.

Sitz. Akad. wiss. Wien, 1866, **53**, p. 489, fig. 3, ☿.

Soldier. Length 9–10 mm.

Head longer than broad, slightly narrowed in front, sides nearly straight, posterior border very shallowly concave; anterior portion subtruncate, the truncated portion rounding into the front. Cheeks with a broad and shallow impression that extends beyond the lateral borders of clypeus. Clypeus subquadrate, a little longer than broad, with broadly rounded anterior border, the surface flattened. Mandibles rather elongate, blades with 7–8 blunt teeth. Antennae slender, their scapes slightly surpassing occipital corners; funicular joints gradually decreasing in length toward apex, terminal joint distinctly shorter than the two preceding joints together. Eyes small, flattened, situated in front of sides at posterior third of head. Pronotum broader than long, moderately convex above, rounded at sides. Mesoëpinotum strongly compressed, and lamellate behind, the base separated from declivous portion by an obtuse angle. Node cuneiform, thick basally, submargined above; from the front biconcave, with the middle projecting as a bluntly pointed triangular process and the lateral portions obliquely truncate. [illegible]

Shining throughout. Mandibles densely rugulose-striate. Antennal scapes with distinct, regular punctation. Head, thorax, and abdomen finely, coriaceous-rugulose.

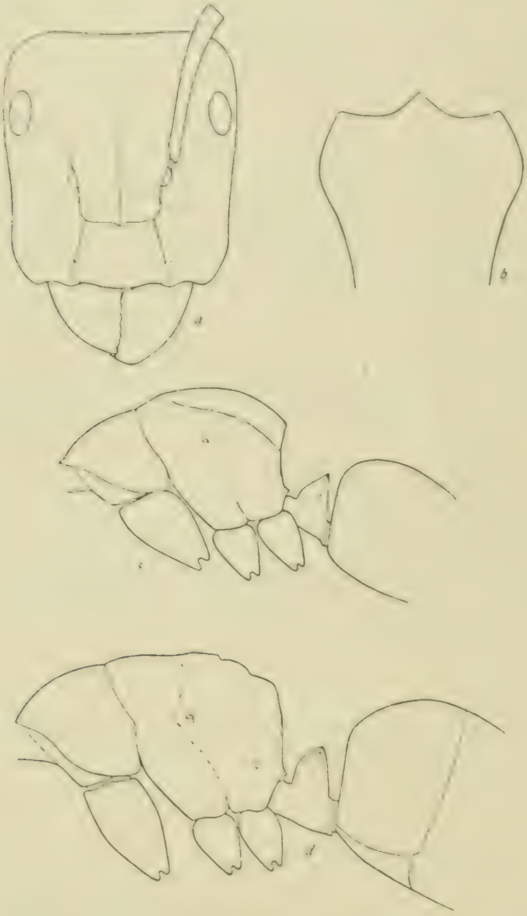

FIG. 30.— Camponotus (Myrmegonia) cristatus Mayr. *a, b, d.* Worker major. *c.* Worker minor. *a.* Front view of head. *b.* Front view of petiolar node. *c, d.* Lateral view of thorax and petiole.

Erect hairs fine and very sparse on head and body lacking on appendages. Minute, short, recumbent hairs regularly, though sparsely distributed on head, body, and appendages.

Jet black; tarsi, insertions of scapes, and the funiculi reddish brown.

Worker. Length 6.5–7.5 mm.

Head longer than broad, slightly narrowed in front, sides nearly straight, posterior border broadly rounded. Mandibles 5-dentate. Clypeus nearly flat, anterior border broadly rounded. Antennal scapes surpassing occipital corners by about three eighths of their length. Eyes large, feebly convex. Mesoëpinotum compressed, the posterior two thirds very strongly, into a high cultrate ridge, which is angulate at the posterior border. Epinotal declivity narrow and flattened below. Petiolar node cuneiform, convex in front and slightly so behind, distinctly margined above; seen from the front, subangulate at middle of sides, concave above the angles and nearly straight along the top. Gaster elongate. Legs long, femora and anterior tibiae compressed.

Feebly shining. Mandibles densely and strongly rugose-striate. Head and thorax coriaceously rugulose-punctate. Gaster transversely rugulose-punctate.

Erect hairs stiff and black, sparse on head and pronotum and lacking on mesoëpinotum and appendages. Gaster with more abundant, finer, and brownish suberect hairs and fine and silky, regular, not dense, recumbent hairs.

Black. Mandibles, funiculi, and tarsi reddish brown.

Female. Length 12 mm.

Head more slender than that of soldier, but otherwise similar. Mesonotum and scutellum flat above, the latter a little broader than long. Epinotum short and rounded in profile. Petiole from the front broader than in soldier, less elevated and pointed at middle and less concave at sides.

Sculpture, pilosity, and color as in soldier. Wings (length 11.5 mm.) clear, with brown veins and stigma.

Male. Length 6.75 mm.

Head a little longer than broad, with very slightly concave cheeks and rounded postocular region. Clypeus feebly convex, its anterior border concave at middle. Scapes surpassing occipital borders by about half their length. Mandibles with two stout, blunt teeth apically.

Color black. Legs brown. Wings very slightly infuscated.

Ovalau: Levuka. Viti Levu: Saiaro, Nadarivatu, Nasoqo, Waiyanitu.

Nests in populous colonies in hollow twigs.

In addition to the difference in the shape of the epinotum and in color, *cristatus* is a large and more robust species than *laminatus*. The petiole of the worker minor, seen from the front is pointed, or in some specimens nearly straight, but not excised.

69. CAMPONOTUS (MYRMEGONIA) CRISTATUS Mayr, var. NAGASAU var. nov.

The soldiers in a large series from different colonies taken on Taviuni have the femora dark red instead of deep black as in typical *cristatus*, a difference that among a few specimens could be considered nest-variants, or as specimens differing in age, but in the large series before me there is no variation in this respect, so the Taviuni form may be considered varietally distinct.

Taviuni: Nagasau (Type-locality), Somo Somo.
Type.— M. C. Z. 8,719.

69a. CAMPONOTUS (MYRMEGONIA) CRISTATUS Mayr, subsp. SADINA, subsp. nov.

A large series of soldiers and workers are very similar in habitus to *cristatus*, but the soldiers average smaller in size (length 8 mm.), have the posterior corner of the epinotum more angulate in profile and an indistinct carina on the basal third of clypeus. The worker in size, sculpture, and color are identical with those of *cristatus*, but the epinotum projects as a pointed tooth, as in *laminatus*. The legs are dark reddish brown as in *cristatus* var. *nagasau*.

Taviuni: Somo Somo (Type-locality) Nagasau. Viti Levu: Nadarivatu, Navai, Nasoqo. Vanua Levu: Labasa, Suene.

This form is intermediate between *cristatus* and *laminatus*.
Type.— M. C. Z. 8,720.

70. CAMPONOTUS (MYRMEGONIA) MAAFUI, sp. nov. Fig. 31.

Soldier. Length 8–9 mm.

Near *cristatus* Mayr. Head longer than broad, narrowed in front, sides nearly straight, posterior angles rounded, border broadly and shallowly concave. Mandibles elongate, bluntly 7-dentate. Clypeus quadrate, much longer than broad, anterior border broadly rounded. Clypeus shallowly impressed as in *C. cristatus*. Antennal scapes slightly surpassing occipital border. Eyes small and flat, situated at posterior third of head. Mesoëpinotum compressed, in profile irregularly sinuate along basal portion of epinotum, angulately rounding into the declivity, the surface of which is nearly flat at sides and subcarinate at middle. Petiole thick wedge-shaped, convex in front, flat behind, rounded above; seen from the front, broadly rounded above.

Moderately shining. Mandibles coarsely punctate and densely rugose-striate. Head and thorax very finely coriaceous, the latter in addition with fine regular punctures.

Stiff, black, erect hairs very sparse on head and body, lacking on appendages. Fine appressed pubescence sparse on head and appendages, longer and more abundant on gaster.

Head, thorax, epinotum, petiole, tip of gaster, and legs, except tarsi, black; dorsum of first three gastric segments light brownish red, with the posterior margins black; mandibles, funiculi, and tarsi brownish red.

Worker. Length 6.5–7 mm.

Head a little longer than broad, sides feebly convex, posterior border broadly rounded. Mandibles with five strong teeth. Clypeus nearly flat, anterior border broadly rounded. Antennal scapes surpassing occipital corners by nearly half their length. Epinotum much as in *cristatus* but with the posterior margin projecting and rounded. Petiole broad at base, narrow above, with convex anterior and nearly flat posterior surfaces; from the front narrowed and somewhat pointed at middle.

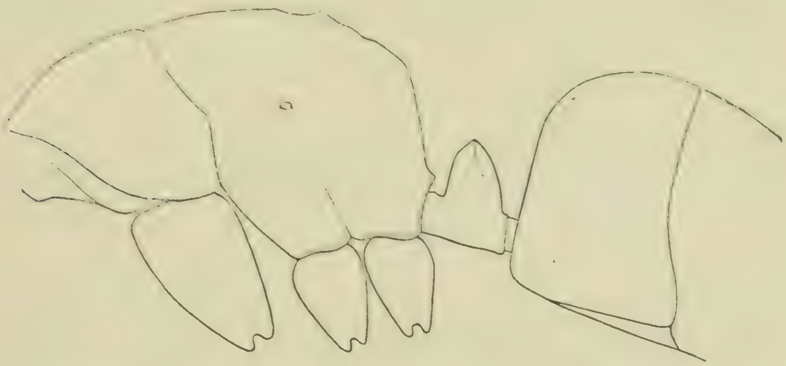

Fig. 31.— Camponotus (Myrmegonia) maafui Mann. Soldier. Lateral view of thorax and petiole.

Nearly opaque. Mandibles rugulose-striate. Head and thorax very densely and finely punctate. Gaster transversely coriaceously striolate.

Head and pronotum with erect, rather stiff and sparse hairs. Epinotum with very short and fine erect hairs. Gaster with a moderately dense covering of long yellow recumbent hairs.

Color as in worker major.

Vanua Levu: Lasema (Type-locality), Suene, Wainunu, Labasa. Nests in hollow twigs.

This species is closely related to *C. cristatus.* The soldiers of *maafui* may be distinguished by the narrower clypeus, the different contour of the epinotal base, the unarmed petiolar node and the color; the workers by the color and pilosity of the gaster and the structure of the node, which in profile is less narrowed and more rounded above.

In the large series before me the petiole of the worker is pointed above instead of broadly rounded or emarginate. *Type.*— M. C. Z. 8,721.

71. Camponotus (Myrmegonia) schmeltzii Mayr. Fig. 32.

Sitz. Akad. wiss. Wien, 1866, **53**, p. 490, ☿.

Worker. Length 5.5–6 mm.

Head a little longer than broad, sides very slightly convex, sides of occiput submargined, the corners, seen from the sides, subangulate, posterior border shallowly concave. Mandibles 5-dentate. Clypeus moderately convex, anterior border rounded. Antennal scapes surpassing occipital borders by nearly half their length. Eyes large, slightly convex, situated behind the middle of sides of head. Pronotum a little longer than broad. Mesoëpinotum strongly compressed, behind, in profile elevated and unevenly, arcuately rounded. Petiolar node in profile inclined forward, pointed in front, margined at sides, anterior face short and convex, the dorsal surface long, sloping, and rounding into the posterior. Legs long and slender, femora and tibiae compressed.

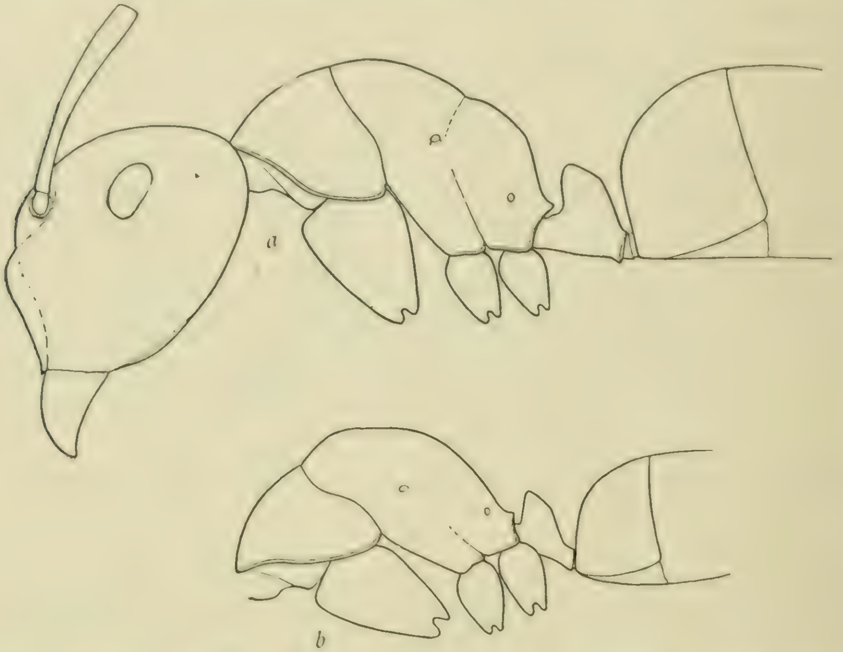

Fig. 32.— Camponotus (Myrmegonia) schmeltzii Mayr. *a.* Soldier. Lateral view of head, thorax, and petiole. *b.* Worker. Lateral view of thorax and petiole.

Shining. Mandibles finely punctate and with sparse striolae. Head and body finely coriaceous.

Fine, erect, white hairs sparse on head and thorax and more abundant on gaster. Short, recumbent, white hairs, regularly distributed on head, body, and appendages.

Black; mandibles and funiculi reddish brown; legs brownish yellow, the tibiae darker than the rest.

Ovalau: Levuka. Viti Levu: Waiyanitu.

Described from several worker medias from Waiyanitu. The species was described from an Ovalau specimen of the same phase, judging from Mayr's description. My only specimen from this island is a very small worker minor, which has the head proportionately a little longer and less concave behind.

The subcarinate sides of the occiput, the angulate posterior corners of the head, the high, arcuate epinotum and the curious petiole are very characteristic. The front portion of the occipital region is unusually broad and flat.

71a. CAMPONOTUS (MYRMEGONIA) SCHMELTZII Mayr, var. KADI, var. nov.

Soldier. Length 6.5 mm.

Head longer than broad, sides nearly straight, posterior border very shallowly concave, anterior portion obliquely truncated, rounding into front. Cheeks broadly and shallowly impressed. Truncated portion of clypeus flat, anterior border rounded. Mandibles 6–7-dentate. Antennal scapes slightly surpassing posterior corners. Thorax convex in profile, roundly impressed between meso- and epinotum. Petiole in profile higher than long, elevated in front, with convex anterior, flattened, sloping dorsal and convex posterior surfaces. Femora and tibiae compressed.

Shining. Mandibles coarsely punctate and rugose-striate. Cheeks and clypeus with very coarse longitudinal carinae. Remainder of head and the body coriaceous.

Fine, erect hairs and short, recumbent hairs rather sparsely distributed on head and body; appendages lacking erect hairs.

Black. Mandibles, funiculi, and tarsi reddish brown.

Worker. Length 5.25 mm.

Differing from typical *schmeltzii* only in the color of the legs which are dark brown to black, instead of having the femora bright yellowish brown.

Male. Length 6 mm.

Head longer than broad, cheeks nearly straight. Mandibles with a large apical tooth. Clypeus obtusely carinate at middle. Scapes slender, surpassing occipital corners by three eighths of their length. Scutellum triangular, longer than broad. Petiolar node in profile subcuboidal, longer than broad; dorsal surface flattened and sloping forward, with bluntly connate anterior corners.

Shining, coriaceous.

Erect hairs sparsely distributed.

Color black. Mandibles and appendages brown.

Vanua Levu: Labasa (Type-locality), Wainunu, Suene.

The irregular, very coarse carinae on the cheeks and clypeus distinguish the soldier. *Type.*— M. C. Z. 8,722.

71b. Camponotus (Myrmegonia) schmeltzii Mayr, var. loloma, var. nov. Fig. 33.

Worker. Length 4–6 mm.

A small series of worker minors and media are very similar in structure and color to *schmeltzii* var. *kadi*, but differ in the outline of the epinotum which is impressed in front of the posterior angle and shows a tendency toward developing into a tooth as in *laminatus* and *lauënsis*. This contour, even in the small series before me is highly variable as shown in Fig. 33.

Var. *loloma* is interesting in being one of the very few truly Fijian ants that I found in the Lau Archipelago. My specimens were taken in the woods near the center of the island.

Lau: Kabara.

71c. Camponotus (Myrmegonia) schmeltzii Mayr, subsp. trotteri, subsp. nov. Fig. 34.

Worker. Length 3.90 mm.

A unique worker from the mountains near the lake in Taviuni differs from the others in the contour of the epinotum and in pilosity. The epinotum, in addition to sparse, long hairs, has a moderately dense covering of very fine, short, erect hairs. In other respects it is very similar to var. *loloma*.

Taviuni: Mountains near lake.

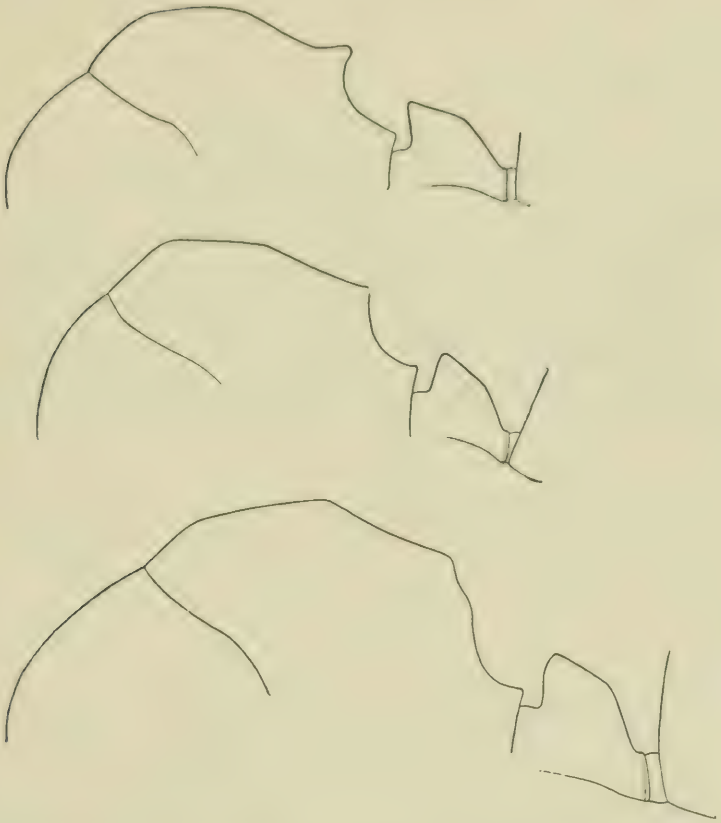

FIG. 33.— Camponotus (Myrmegonia) schmeltzii var. loloma Mann. Workers. Lateral views showing variation in epinotal contour.

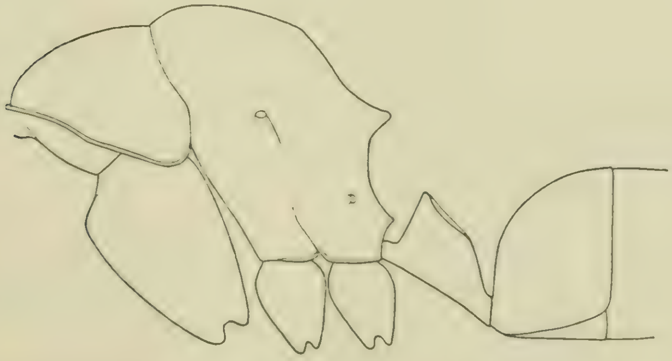

FIG. 34.— Camponotus (Myrmegonia) schmeltzii subsp. trotteri Mann. Worker. Lateral view of thorax and petiole.

72. CAMPONOTUS (MYRMEGONIA) LAUËNSIS, sp. nov. Fig. 35.

Worker. Length 5 mm.

Head longer than broad, sides nearly straight, sides of occiput roundly carinate, occipital angles narrowly rounded, posterior border concave. Clypeus feebly convex, anterior border broadly rounded. Antennal scapes surpassing occipital corners by nearly half their length. Pronotum convex, much broader than long. Mesoëpinotum compressed, behind very strongly, with an acute margin; in profile elevated, irregularly arcuate and projecting behind as elongate triangular tooth. Epinotal base in profile strongly concave, its surface rounded. Petiole elongate, cuboidal, inclined forward; seen from above triangular, with the corners rounded; anterior and lateral borders margined.

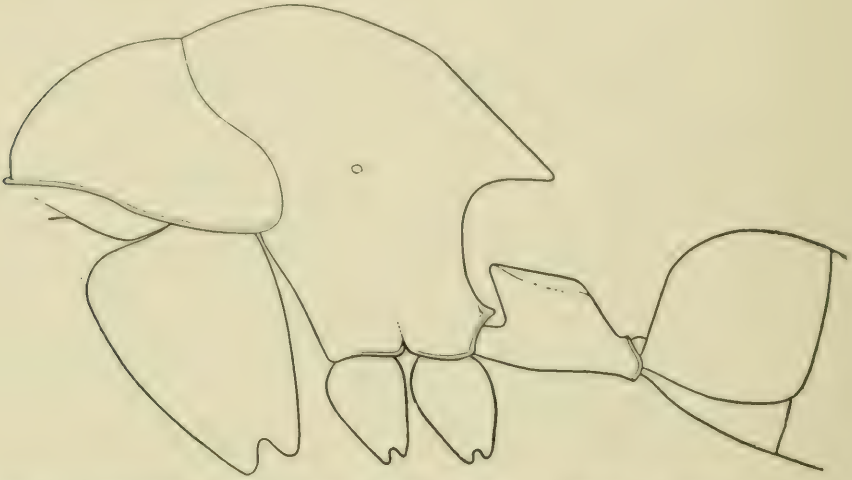

Fig. 35.— Camponotus (Myrmegonia) lauënsis Mann. Worker. Lateral view of thorax and petiole.

Moderately shining. Mandibles punctate and striate. Head, body, and appendages coriaceous-rugulose.

Erect hairs long and fine, sparse on head, more abundant on gaster. Shorter appressed hairs sparse in head, body, and appendages.

Color black. Legs light reddish brown.

Lau: Kabara, Waquava.

The structure of the head and petiole is almost identical with that of *schmeltzii* but the more compressed and strongly backward-projecting epinotum is entirely different, resembling somewhat that of an extreme form of *laminatus*.

The subgenus Myrmegonia is made up of a complex of species, with such closely connecting forms that one might consider them all a single species or divide them into many. The *schmeltzii* group is distinct in the structure of the head, but the epinotum varies from a strongly rounded contour in *schmeltzii* (typical) and the variety *kadi*, to a projecting, toothed structure more extreme even than in *laminatus.*

Camponotus (*Myrmegonia*) *laminatus* in habitus is well defined by its more elongate form, and the dentate epinotum, and the excised upper surface of the node, the latter, however, a variable character, and color, but the variety *levuanus* approaches *cristatus* subsp. though it is a much more slender form.

The Australian species, which have been placed in this subgenus, have the epinotum of the worker compressed, but not to such an extent as in the Fijian forms, but the head of the soldier is not strongly truncate in front, so that it would seem more proper to include them in another subgenus, related to Myrmosaga and Myrmocamelus, while Myrmegonia includes only the Fijian species and is closely related to Colobopsis, both in the structure of the head in the soldier and in the exclusive twig-dwelling habit.

Table of Species (Workers) of Myrmegonia.

1. Smaller species. Head concave behind, occipital corners narrowly rounded, sides of occiput between eyes and corners narrow and roundly margined; petiole in profile subcuboidal, elevated in front, with a rather long, sloping dorsal surface..2

Large species. Head convex behind, occipital corners and sides behind eyes broadly rounded. Petiole in profile cuneiform, narrow and margined above..6

2. Mesoëpinotum not toothed behind; the epinotal base broadly rounding into the declivity..3

Mesoëpinotum impressed behind or with either a tooth or an obtuse angle between base and declivity..4

3. Femora bright brownish red.......................*schmeltzii* Mayr

Femora dark brown to black..................*schmeltzii* var. *kadi* Mann

4. Epinotum evenly arched, not impressed in profile, projecting behind as a long pointed tooth..................................*lauënsis* Mann

Epinotum impressed in profile in front of angle between base and declivity, and with a moderately developed blunt tooth or angle....................5

5. Epinotum feebly arcuate in profile, tooth shorter; pubescence very sparse...................................*schmeltzii* var. *loloma* Mann

Epinotum more strongly arcuate in profile, tooth large and broadly triangular; pubescence white, erect, and rather dense on epinotum.
schmeltzii subsp. *trotteri* Mann

6. Epinotum angulate between base and declivity, but not projecting as a tooth 7

Epinotum projecting behind as a distinct, acute, triangular tooth 9

7. Gaster brownish red, with a dense covering of appressed brownish yellow hairs . . . . *maafui* Mann

Gaster black, with much sparser pubescence 8

8. Femora black . . . . *cristatus* Mayr

Femora red-brown . . . . *cristatus* var. *nagasau* Mann

9. Thorax rufocastaneous . . . . *laminatus* Mayr

Thorax black 10

10. Slender, elongate species. Node strongly excised at middle. Thorax more shining . . . . *laminatus* var. *levuanus* Mann

Stouter species. Epinotum pointed at middle. Thorax very feebly shining. *cristatus* subsp. *sadina* Mann

73. CAMPONOTUS (COLOBOPSIS?) VITIENSIS, sp. nov. Fig. 36.

Worker. Length 7.5–8 mm.

Head longer than broad, scarcely narrowed in front, sides and posterior border nearly straight. Mandibles with four stout triangular teeth. Clypeus feebly convex, transversely depressed before anterior margin which is broadly rounded. Antennae slender, their scapes surpassing occipital border by more than half their length. Pronotum about as long as broad, little convex above. Mesoëpinotum depressed, very feebly convex, in profile, broadly and shallowly impressed transversely at middle, the base rounding into the broad and nearly flat declivity. Petiolar node in profile longer than high, broadly triangular above with slightly concave anterior and flat posterior surface; from the front broad above, convex at middle, with the sides elevated as short, blunt cones. Gaster long and depressed. Legs long, slender, and strongly compressed.

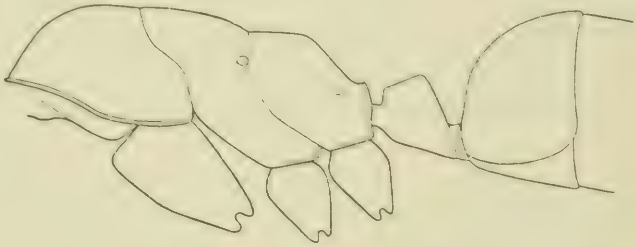

FIG. 36.— Camponotus (Colobopsis) vitiensis Mann. Worker. Lateral view of thorax and petiole.

Subopaque. Gaster and legs a little more shining than the rest.

Mandibles coarsely punctate apically, densely rugulose-striolate basally.

Head and body coriaceous-rugulose, gaster transversely so; head and gaster with very sparse setigerous punctures and finer punctation.

Stiff, black, erect hairs very sparse on head and posterior margins of gastric segments. Microscopic pubescence sparse on head, gaster, and appendages.

Dead-black, with the last tarsal joint and the tip of the terminal joint of the funiculus and the mandibles brownish red.

Viti Levu: Nadarivatu.

Described from a large series of workers found on the ground and on the trunks of kauri trees. The nests are probably situated high in these trees. As they run about, the workers elevate the gaster and carry it held forward over the thorax.

The elongate, flattened thorax, the curious petiole, the depressed gaster, the very long slender and compressed legs and the dead-black color are characteristic of this species, which, if it does belong to the subgenus Colobopsis as I believe, is an unusually large form. *Type.*—M. C. Z. 8,723.

74. CAMPONOTUS (COLOBOPSIS) DENTATUS Mayr. Fig. 37.

Sitz. Akad. wiss Wien, 1866, **53**, p. 492, fig. 5, ☿.

Soldier. Length 4.75–5.25 mm.

Head one fifth longer than broad, about as broad in front as behind, sides feebly convex, posterior corners rounded, border shallowly concave. Mandibles 5-dentate. Clypeus broad, quadrate, shallowly, longitudinally impressed at middle and roundly elevated at sides, anterior border nearly straight; portion above truncation three times as broad as long. Cheeks at sides of clypeus shallowly impressed. Frontal carinae thick, moderately elevated, not extending to opposite anterior border of eyes. Middle of front indistinctly carinate. Antennal scapes stout, slightly surpassing occipital corners; funicular joints, excepting the first and the terminal, less than twice as long as broad. Eyes nearly flat, situated at posterior fourth of sides of head. Thorax and epinotum robust, broad and flattened above. Mesonotum indistinctly carinate at middle. Epinotum armed with a pair of erect, rather bluntly pointed spines, which are a little longer than half their distance apart at base; the surface slightly convex in front, concave between the spines; declivity shorter than the base, and concave in profile. Petiolar node from above one and one half times as long as broad, broadest in front, anterior corners narrowly rounded, sides straight, posterior border strongly excised, with the corners bluntly conical, dorsal surface flat, except posteriorly where it is impressed at middle; in profile higher than long, anterior surface straight and narrowly rounding into the dorsum, which is flat, posterior surface concave. Legs short and stout.

Gaster moderately, the remainder feebly shining. Mandibles strongly punctate and rugose-striate. Clypeus and cheeks coarsely and reticulately rugose. Anterior part of front more finely reticulate, remainder of head finely rugulose, with scattered punctures. Pronotum, epinotum, and petiole very densely punctate, the pronotum more shallowly and more shining. Mesonotum rugulose and with fine reticulae. Gaster coriaceous.

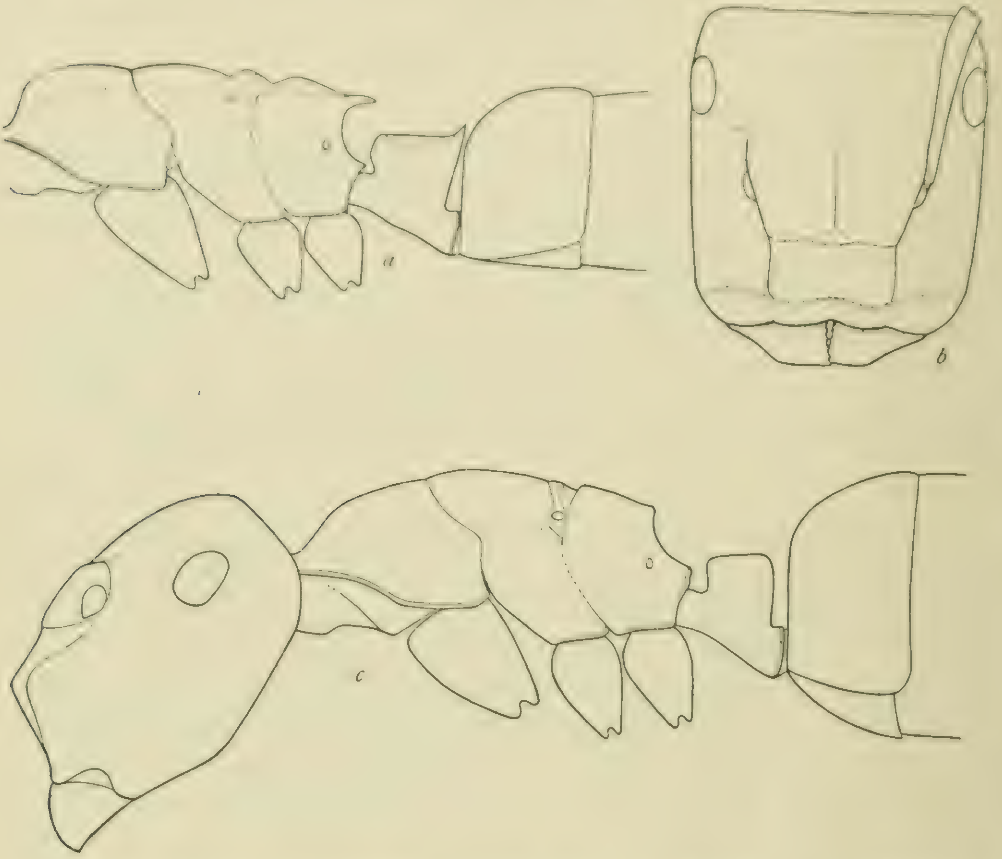

Fig. 37.— Camponotus (Colobopsis) dentatus Mayr. *a.* Worker. *b*, *c*. Soldiers. *a.* Lateral view of thorax and petiole. *b*. Front view of head. *c*. Lateral view of head, thorax, and petiole.

Erect hairs very short, black and exceedingly sparse on head and gaster, lacking on other parts. Very fine and short recumbent white hairs on head, gaster, and appendages.

Gaster and head, black; front of head, mandibles, antennae, and legs dark brownish red, thorax, and petiole lighter brownish red.

Worker. Length 3.5–4 mm.

Head very little longer than broad and a little narrowed in front, posterior border rounded. Mandibles with five triangular teeth. Clypeus evenly convex, broader than long and rounded at the corners, anterior border nearly straight at middle. Antennal scapes stout, surpassing the occipital corners by a distance a little greater than their diameter at tips. Pronotum much broader than long, flattened discally. Mesonotum longitudinally carinate at middle. Base of epinotum strongly impressed in front, gibbous behind, armed with a pair of horizontal strongly curved spines, which are thick apically and blunt at tips. Petiole from above longer than broad, narrowed behind the anterior border, concave at middle, posterior corners elevated as long, acute spines. Legs robust.

Subopaque, gaster shining. Mandibles punctate and finely striate. Head, thorax, epinotum, and petiole reticulately rugose. Petiole and legs very densely punctate.

Erect hairs very short and exceedingly sparse. Fine, appressed hairs discernible only on gaster and appendages.

Head and gaster black, mandibles, thorax, and petiole brownish red, legs brown, with tibiae and tarsi lighter than the femora.

Female. Length 6–6.5 mm.

Head smaller, but otherwise similar to that of soldier. Epinotum rounded in profile. Petiole in profile subcuboidal, narrowly rounded behind; anterior border concave.

Sculpture of head as in soldier. Thorax and gaster coriaceous and with fine scattered punctures.

Head and gaster black, front of head, mandibles, and antennae dark brownish red; thorax, petiole, and legs brown, the legs darkest. Wings (length 6.75) subhyaline, veins pale brown.

Male. Length 4 mm.

Head about as broad as long, longitudinally impressed in front of median ocellus. Frontal carinae rounded, strong, with the surface between them flat in front. Clypeus convex, anterior border rounded. Antennae short, scapes surpassing occipital corners by about one third their length, funicular joints, except the terminal, much less than twice as long as broad. Petiole from above quadrate, nearly twice as long as broad, the corners narrowly rounded; in profile, elongate, nearly flat above and a little elevated behind.

Shining finely, and densely punctate throughout, the head more strongly than the rest.

Erect hairs short almost lacking, and short appressed pubescence very sparse.

Dark brown to black throughout. Wings clear, with pale brown veins.

Ovalau: Levuka. Viti Levu: Tai Levu, Suva, Nadarivatu, Waiyanitu. Vanua Levu: Labasa, Wainunu, Suene. Taviuni: Somo Somo, Nagasau. Kadavu: Vanua Ava. Dravuni.

The worker agrees closely with Mayr's description. The figure published by Mayr is incorrect, as it shows the petiole narrowed above, instead of broad, and the spines are not drawn sufficiently prominent.

The workers vary in the color of the thoracic pleurae, which in some specimens have the lower portions dark brown.

C. dentatus is not confined to the forests, but lives also among scrubby vegetation near the coast or in cultivated districts.

75. CAMPONOTUS (COLOBOPSIS) MAYRIELLA, nom. nov.

Colobopsis carinata Mayr, Verh. Zool. bot. gesellsch. Wien, 1870, **20**, p. 934. (nec *Formica carinata* Brullé, 1846).

Soldier. Length 6.5–7.5 mm.

Head quadrate, nearly a third longer than broad, sides, except at cheeks, straight, posterior border shallowly concave. Mandibles with 6–7 stout teeth. Clypeus a little narrowed in front, anterior corners rounded, border very indistinctly concave at middle, middle with a sharp carina, surface flat in front. Cheeks shallowly impressed, the impressed portion bordered by an interrupted carina. Frontal carinae little divergent, extending to opposite middle of eyes. Frontal area broadly triangular. Front anteriorly with a short, rather sharp carina. Antennal scapes barely surpassing occipital corners; funicular joints all more than twice as long as broad, terminal joint slender and as long as the two preceding joints together. Thorax in profile feebly convex, sutures distinct. Epinotal base as long as the declivity and broadly rounding into it. Node more than twice as high as long, convex in front, flat behind, upper border narrowly concave at middle and roundly margined. Femora moderately impressed.

Shining. Mandibles coarsely punctate and rugose-striolate. Cheeks and clypeus with short rugae. Head and body finely coriaceous.

Erect hairs very sparse, on head and gaster and tips of femora. Sparse fine appressed pubescence on head, body, and appendages.

Fuscopiceous. Front of head, mandibles, and antennae rufous. Legs fulvous, with the femora infuscated.

Worker. Length 5.5 mm.

Head elongate, rounded behind eyes, sides in front of eyes straight and subparallel. Mandibles 4-dentate. Clypeus convex, feebly carinate at middle, anterior border rounded. Antennal scapes surpassing occipital border by half their length; basal funicular joints nearly four times as long as broad, decreasing in length toward the apex, terminal joint shorter than the two preceding joints together. Thorax long and low, and weakly impressed at sutures. Base of epinotum nearly straight in profile, longer than the declivity and separated from it by a rounded angle. Node higher, cuneiform, convex in front, flat behind, its upper border margined and subtruncate at middle.

Shining. Mandibles with sparse, coarse punctures and fine striae. Head and body finely coriaceous; front of head with sparse, coarse punctures.

Erect hairs long and rather stiff on head and gaster, and fine appressed pubescence regularly distributed on head, gaster, and appendages.

Fuscopiceous, front of head, mandibles, and appendages fulvous; femora fuscous.

Female. Length 9.5 mm.

Very similar to the soldier, with the usual sexual difference. The petiole is thicker, as broad above as at base and its dorsal surface broad and flat. Wings (length 8 mm.) subhyaline, with brown veins.

Male. Length 5.5 mm.

Head longer than broad, clypeus obtusely carinate at middle, anterior border rounded. Antennal scapes surpassing occipital borders by about one third their length. Node low and rounded, broad above and shallowly impressed at posterior border.

Shining. Coriaceous. Mesonotum and scutellum with few very coarse shallow punctures.

Erect hairs very fine and sparse.

Fuscopiceous. Funiculi and legs fulvous, femora darker than the rest.

Ovalau (Mayr). Viti Levu: Waiyanitu. Vanua Levu: Labasa, Suene, Lasema, Wainunu.

I did not find this species on Ovalau, the type-locality, but it was not uncommon in the other localities cited, nesting, as usual in the subgenus, in hollow twigs. *Type.*— M. C. Z. 8,724.

76. CAMPONOTUS (COLOBOPSIS) OCEANICUS Mayr.

Verh. Zool. bot. gesellsch. Wien, 1870, **20**, p. 943, ♀.

"*Female.* Length 10 mm.

Shining, rufo-castaneous. Head castaneous, front, vertex and abdomen piceous. Sparsely pilose; scarcely pubescent. Mandibles finely striolate; sparsely punctate. Head finely coriaceous, not strongly obliquely truncate in front. Clypeus vertical, finely striolate. Front almost smooth, with a few very fine punctures. Clypeus quadrangular, scarcely longer than broad flat, without a median carina. Cheeks convex. Thorax unarmed, microscopically coriaceous. Petiole with a minute, erect, thickened scale, thicker than high. Gaster finely rugulose.

Wings. Length 9 mm., subhyaline. Stigma and costa ochraceous.

Ovalau." Mayr.

I did not find this species, which apparently is distinct in having the clypeus broader than in the related species and the petiolar node very low.

77. Camponotus (Colobopsis) maudella, sp. nov. Fig. 38.

Soldier. Length 7.5–8 mm.

Head about one third longer than broad and slightly narrowed in front, sides nearly straight, posterior border shallowly concave, truncated portion rounding into front of head. Mandibles stoutly 7-dentate. Clypeus carinate at middle, on the truncated portion longer than broad, its sides concave, anterior corners broadly rounded, border concave. Cheeks narrowly impressed. Antennal scapes barely surpassing occipital angles; funicular joints slender, terminal joint shorter than the two preceding joints together. Thorax elongate, little convex above, with distinct sutures. Base of epinotum rounding into declivity. Petiole in profile three times as high as long, convex in front, flat behind, with the dorsum narrowed and rounded, from the front weakly emarginate above at middle. Legs rather stout, femora compressed.

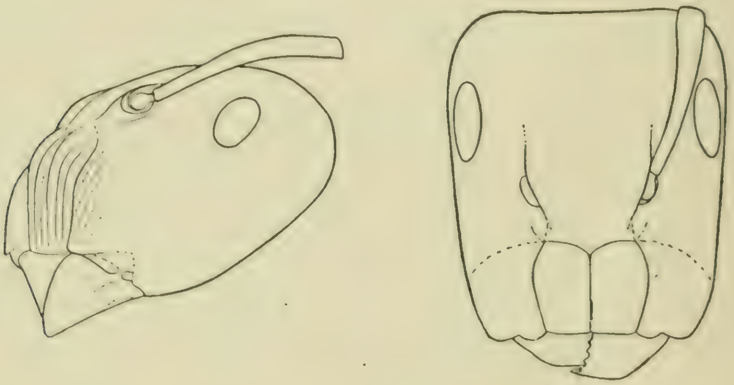

Fig. 38.— Camponotus (Colobopsis) maudella Mann. Soldier. Side and front views of head.

Shining. Mandibles coarsely punctate and rugosely striate. Cheeks and clypeus longitudinally striate. Anterior portion of front rugulose. Remainder of head and the body finely coriaceous.

Sparse, erect hairs present on head and gaster and sparse pubescence on head, thorax, abdomen, and appendages.

Head, mandibles, and scapes brownish red; thorax and legs, yellow-brown, tarsi reddish; gaster black with the posterior borders of segments banded with brown and the base of the first segment pale.

Worker. Length 6 mm.

Head elongate, evenly rounded back of eyes, sides in front of eyes nearly straight. Clypeus very obtusely carinate at middle, rounded at anterior border. Antennal scapes surpassing occipital borders by about half their length, funicular joints long, and slender. Thorax elongate, slender, the sutures feebly impressed. Epinotal base strongly compressed, separated from declivity by a rounded angle. Node three times as high as long, convex in front, flat behind, with the top narrow and margined.

Shining. Mandibles finely rugose-striolate. Head and body very finely coriaceous.

Long erect hairs rather sparse on head and gaster and very fine appressed pubescence on head, body, and appendages.

Brownish yellow; gaster black with brown margins to the segments.

Female. Length 9 mm.

Similar to soldier. Petiole thick, quadrate, higher than broad shallowly impressed anteroposteriorly.

Mesonotum with sparse, coarse, and shallow punctures and finer, though distinct, punctures. The sculpture otherwise as in soldier.

Color as in soldier, except that the brown bands across the gaster are much broader. Wings (length 9 mm.) faintly infuscated along apical border; veins pale brown.

Male. Length 6 mm.

Head longer than broad. Clypeus rounded in front. Thorax rather slender. Petiole in profile slightly higher than long, broadly rounded above.

Shining and finely coriaceous. Mesonotum with a few coarse, shallow punctures.

Erect hairs and appressed pubescence sparse.

Head black, the remainder dark brown to black with the mandibles, funiculi, and legs brown.

Viti Levu: Waiyanitu (Type-locality), Nadarivatu. Taviuni: Nagasau.

An abundant species, especially near Waiyanitu. It is closely related to *mayriella*, differing in the more elongate, striated clypeus in the soldier and in color.

This species can not be identical with *oceanica* Mayr, which was described from a female taken at Ovalau, because the clypeus is much longer than broad and the petiole distinctly higher than thick. *Type.* — M. C. Z. 8,725.

77a. CAMPONOTUS (COLOBOPSIS) MAUDELLA Mann, var. SEEMANNI, var. nov.

Soldier, worker, and female differing from these phases of typical *maudella* in the color of the gaster, which is brownish yellow, similar to the thorax, with each segment banded apically with fuscous, which extends forward as a median blotch.

Viti Levu: Nadarivatu.

This color-pattern is constant in a series of soldiers and females. Some of the workers have the bands indistinct, and the gaster almost entirely yellow. *Type.*— M. C. Z. 8,726.

78. CAMPONOTUS (COLOBOPSIS) JANUS, sp. nov.

Soldier. Length 7.5 mm.

Head elongate, about one and two thirds times as long as broad, sides nearly straight, posterior border very shallowly concave. Mandibles with seven very stout teeth. Clypeus elongate, strongly carinate at middle, narrowed in front sides on truncated portion concave, anterior border very faintly concave. Cheeks rather strongly impressed in front. Scapes slightly surpassing occipital corners; the apical funicular joints barely one and one half times as long as broad, terminal joint shorter than the two preceding joints together. Thorax and petiole similar to *maudella* but the notch on dorsum of node more pronounced.

Shining. Mandibles coarsely punctate and rugose-striate. Front of cheeks and the clypeus longitudinally striate, the striae becoming very feeble on anterior portion of clypeus. Anterior portion of front densely longitudinally striolate. Remainder finely coriaceous.

Head and gaster with very sparse, erect hairs. Head, body, and appendages with minute sparse and regular pubescence.

Fulvous, head reddish, gaster infuscated.

Worker. Length, 4.5–5 mm.

Head elongate, suboval, slightly broadest in front. Clypeus convex, subcarinate at middle, rounded anteriorly. Antennal scapes surpassing occipital corners by distinctly less than half of their length. Thorax long and slender little convex in profile. Basal portion of epinotum strongly compressed, separated from declivity by an obtuse angle; declivity flattened, slightly concave in profile. Petiole elevated, rather thin, convex in front, flat behind, its dorsal border margined and at middle shallowly concave.

Shining. Mandibles finely punctate. Head and body coriaceous.

Pilosity as in soldier.

Fulvous throughout, except the gaster which is somewhat infuscated.

Kadavu: Buke Levu.

Very close to *maudella*, from which the soldier can be distinguished by the longer and narrower head. The antennal scapes of the worker minor are shorter than those of *maudella* and the color of the two species is different.

Key of the Fijian Species (Soldiers) of Colobopsis.

1. Epinotum and petiole bidentate. Dark red species with black head and gaster. Length 4.75–5.25 mm. . . . .*dentatus* Mayr

Epinotum and petiole not bidentate. 2

2. Head one and two thirds times as long as broad. Head rufous, body testaceous with the gaster somewhat infuscated. . . . .*janus* Mann

Head shorter and broader. 3

3. Clypeus without median carina. Node subquadrate. Fuscopiceous, head in front rufous. Length 5.6 mm. . . . .*rufifrons* F. Smith

Clypeus carinate at middle. Node elevated, convex in front, flat behind and narrowed above. 4

4. Clypeus without strong carinae other than the median one; cheeks with short rugae. Fuscopiceous, middle and posterior coxae and the tibiae yellow; front of head, mandibles, and tarsi reddish brown. . . . .*mayriella* Mann

Clypeus and cheeks strongly striated. Head rufous, thorax rufocastaneous. .5

5. Gaster black, with base of first segment and an apical band on all segments fulvous. . . . .*maudella* Mann

Gaster yellowish, banded apically with fuscous which extends forward as a medial blotch. . . . .*maudella* var. *seemanni* Mann

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THE BRACHIOPODA OF THE MAQUOKETA OF IOWA.

BY JOHN H. BRADLEY, JR.

WITH TWO PLATES.

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No. 6.— *The Brachiopoda of the Maquoketa of Iowa.*

By John H. Bradley, Jr.

Introduction.

The publication of a large number of new and curious trilobites from the Maquoketa of Clermont and nearby localities in northeastern Iowa by Slocum has caused renewed attention to be given to a region which has for many years been known for its fossils. In 1917, in company with Prof. P. E. Raymond, I spent a week at Clermont, where, with the efficient guidance and assistance of Mr. A. H. Becker, a collection of representative fossils was secured. The present paper is primarily a description of the brachiopods, and though there are fewer novelties among the brachiopods than were found among the trilobites from the same locality, it is nevertheless true that, including the eight new species, nineteen out of twenty-seven species are known only from the Maquoketa. *Lingula beltrami*, *Plectorthis* (*Austinella*) *kankakensis*, *P.* (*A.*) *whitfieldi*, *Dalmanella macrior*, *D. corpulenta*, *Dinorthis proavita*, *Leptaena unicostata*, *Strophomena acuta*, *S. wisconsinensis*, *S. planodorsata*, and *Parastrophia divergens* are, with few exceptions, restricted to the highest Ordovician of Iowa, Minnesota, and Wisconsin, and none of them has been found in Ohio or Indiana. Five of the remaining eight species, *Hebertella insculpta*, *Plaesiomys subquadrata*, *Strophomena neglecta*, *S. nutans*, and *Rhynchotrema capax* are characteristic fossils of the typical Richmond, while three, *Crania laelia*, *Hebertella sinuata*, and *Plectambonites rugosus*, are found in both the Cincinnatian and Richmond.

The Trentonian aspect of the fauna is expressed in some of the Strophomenae, in the small Plectambonites and Zygospira, and in the presence of Parastrophia. The dominant facies is, however, Richmondian, though none of the typical fossils of the late Richmond is present.

Maquoketa Shale.

Position and Distribution: — Few formations have been more written about or more misunderstood than the Maquoketa shale. Hall, the first to recognize it, called it the "Hudson River formation," a term which is now bereft of meaning. It was first formally labeled "Maquoketa shale" in 1870 by White, who supposed it to represent some particular epochal subdivision of the Cincinnati group. This non-committal usage of the term has continued to the present time, so that now as formerly, the Maquoketa comprises those late Ordovician sediments that occur in Iowa, Wisconsin, Minnesota, and Illinois, underlain by the massive Galena and overlain by the equally massive dolomite of the Niagara.

The exposures of this formation extend over a long narrow area in the states mentioned, usually bordering the Mississippi River. It follows the same northwest, southeast strike as the Galena and Niagara. The most southerly exposure is in Jackson County, Iowa. South from there, it disappears and the Galena and Niagara meet. To the north the Maquoketa thickens and attains a maximum of 200 ft. (Calvin). In northeastern Iowa it again decreases and slowly thins out in southern Minnesota, where in some places it is discernible with a thickness of but a few inches.

The great difficulty encountered in attempting to correlate the Maquoketa shale is due to the fact that the formation has not been correlated either lithologically or palaeontologically within itself. Equivalent strata of different but not very widely separated localities often show entirely dissimilar lithologic and faunal characters. For example, the heavy dolomitic beds at Clermont have no vestige of similarity to the strata of the typical region at Graf, Iowa. The Ctenodonta and Orthoceras beds of Dubuque County are not present in Fayette or Winneshiek Counties. In the light of this fact it can be appreciated why investigators have had difficulty in correlating these beds with any part of supposed equivalents in Ohio or New York.

Origin: — The heterogeneity of the Maquoketa shale has led writers to infer a shallow water or shore origin. The great localization of faunas and the local lithologic variation is the basis of this decision. In many places the muddy facies of shore deposition is evident. Shrinkage cracks on some of the layers, the broken condition of most of the fossils and a certain irregularity in bedding in Winneshiek County, Iowa, led members of the state Survey to call this an old beach deposit (1905). The Maquoketa appears to have been laid down in comparatively shallow water, just how deep it is impossible to say. The land-locked Galena sea with its arid shores and salty waters gave way to a body of water freely communicating with the open ocean. Mechanical sediments, indicative of general rainfall, were laid down in water of normal density. The lithologic and faunal differences were no greater than those to be seen in the sediments and life of shallow seas today.

A marked lithologic change is observed in all places at the boundary between the Galena and Maquoketa. Whether the Maquoketa was preceded by a period of erosion is still uncertain. In Dubuque County, Iowa, no erosion of the Galena can be noticed and no unconformity. At Graf, on the other hand, the Galena dolomite and the blue shale of the Maquoketa have a bed of yellow clay between them, a suggestion of erosional unconformity.

Lithologic Character:— Although much variation in composition is typical of the Maquoketa, dark bluish gray clay-shale predominates.

The formation may occur as a single undivided body of shale. In one locality it outcrops as dolomite and limestone to a thickness of forty feet. In northern Iowa the formation falls naturally into four members: —

4. Brainerd shale.
   Blue and bluish gray shale with strata of limestone interbedded at top and bottom. 120 feet.
3. Fort Atkinson limestone.
   Massive yellow cherty dolomite with associated beds of limestone. 40 feet.
2. Clermont shale.
   Bluish, plastic, fine-grained shale, well developed at Clermont, Iowa. 15 feet.
1. Elgin shaly limestone.
   Limestone, dolomite, shaly limestone with beds of calcareous shale and thin partings of bluish less calcareous clay that are variable in character and fossil content.

This division, unfortunately, does not persist throughout the formation. A division into three members seems to be the more universally applicable although this is not a hard and fast rule.

LINGULIDAE.

LINGULA BELTRAMI Winchell and Schuchert.

Lingula beltrami Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 351, fig. 25 a, b.

A single incomplete specimen representing parts of both valves was obtained from the Lower Maquoketa at Clermont. The condition of preservation is not such as to justify any special description.

CRANIIDAE

CRANIA LAELIA Hall.

Crania laelia Hall, Descrip. Crinoidea etc., 1866, p. 131. 24th Rept. N. Y. State cab. nat. hist., 1872, p. 220, pl. 7, fig. 16. Miller, Cinc. quart. journ. sci., 1875, **2**, p. 12. Hall and Whitfield, Pal. Ohio, 1875, **2**, p. 75, pl. 1, fig. 16. Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, pl. 41, fig. 1. Grabau and Shimer, N. A. index fossils, 1907, **1**, p. 297, fig. 242. Cumings, 32d Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 897, p. 33, fig. 2.

Shell small, inequivalve, oval in outline, with width greater than length. Dorsal valve highly convex; beak elevated, pointed, situated nearly in the middle of the shell.

Surface marked by concentric lines of growth as well as radial striations. The latter vary considerably in number and strength.

This shell is quite common in the Maquoketa at Clermont, Iowa, and is usually found attached to an orthid or Rafinesquina. In no case was the Crania marked like the surface of the host.

Locality: — Maysville and Richmond; Cincinnati, Ohio, and many localities in Ohio, Indiana, Kentucky, Tennessee, etc., Lower Maquoketa at Clermont, Iowa.

ORTHIDAE.

The most recent faunal lists have not adequately suggested the variety of Orthidae to be found in the Maquoketa. Until quite recently *Plectorthis* (*Austinella*) *whitfieldi* (N. H. Winchell) was the only member of this common Palaeozoic family definitely identified from the various outcrops in Iowa, Illinois, Wisconsin, and Minnesota.

PLECTORTHIS (AUSTINELLA) KANKAKENSIS (McChesney).

Orthis kankakensis McChesney, New Pal. fossils, 1861, p. 77. Trans. Chicago acad. sci., 1868, **1**, p. 29, pl. 9, fig. 3.

Plectorthis kankakensis Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, p. 221, pl. 5, fig. 24, 25.

Austinella kankakensis Foerste, Bull. sci. lab. Denison univ., 1909, **14**, p. 224.

The difference between *P. kankakensis* and *P. whitfieldi* is mentioned in the discussion of the latter species. Both occur plentifully at

Clermont and are the most numerous of the Orthidae in the Maquoketa of that locality. *P. kankakensis* is the wider and has more striations. Below is a comparison of average specimens of each.

	Length	Width	Greatest convexity	Number striations
A. kankakensis	26 mm.	30 mm.	13 mm.	60
A. whitfieldi	26.5 mm.	27 mm.	13 mm.	46.

Locality: — The Fernvale at Wilmington, Illinois and the Lower Maquoketa at Clermont, Iowa. M. C. Z. 8,536.

PLECTORTHIS (AUSTINELLA) WHITFIELDI (N. H. Winchell).

Plate **1**, fig. 1.

Orthis whitfieldi N. H. Winchell, 9th Ann. rept. geol. nat. hist. surv. Minnesota, 1881, p. 115.

Orthis pectinella Whitfield (part), Geol. Wisc., 1882, **4**, p. 259, pl. 12, fig. 8.

Plectorthis whitfieldi Hall and Clarke, Pal. N. Y., 1892, **8**, pl. 1, p. 221, pl. 5, fig. 26.

Orthis (*Plectorthis*) *whitfieldi* Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 437, pl. 33, fig. 8–13.

Austinella whitfieldi Foerste, Bull. sci. lab. Denison univ., 1909, **14**, p. 244 (gen. ref.); 1912, **17**, p. 131, pl. 8, fig. 9.

?*Plectorthis* sp. cf. *whitfieldi* Ruedemann, Bull. 162, N. Y. state mus., 1912, pl. 4, fig. 8.

This species is closely related to *Plectorthis* (*Austinella*) *kankakensis* (McChesney) of the Fernvale at Wilmington, Illinois, but is always less extended along the cardinal area and more square in outline. It is hard to separate these species in some instances, because of the variation in the number of striations which characterizes them both. Where they occur abundantly together, as at Clermont, they have a tendency to intergrade into each other.

The pedicle-valve has a distinct beak; cardinal area arched; delthyrium triangular. The striations are quite strong; their number varies from thirty-six to forty-eight. This is the chief distinction between *whitfieldi* and *kankakensis,* the latter possessing sixty to seventy striae on the anterior margin. The striations in both species increase by implantation.

The brachial-valve is much less convex than the other; a slight flattening along the middle grades into a slight concavity at the anterior margin in large specimens. In some cases the exterior of this valve is marked by fine concentric striations.

A typical specimen measured: —

Width 27 mm., Length 26.5 mm., Greatest convexity 13 mm.

Locality: — Richmond at Spring Valley and Granger, Minnesota; Delafield, Wisconsin; Savannah, Illinois; Clermont, and Lattners, Iowa. M. C. Z. 8,535.

HEBERTELLA SINUATA (Hall).

Orthis sinuata Hall, Pal. N. Y., 1847, **1**, p. 128, pl. 32B, fig. 2. Miller, Cinc. quart. journ. sci. 1875, **2**, p. 36.

Orthis occidentalis var. *sinuata* Meek, Pal. Ohio, 1873, **1**, pt. 2, p. 98.

Hebertella sinuata Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, p. 222, pl. 5A, fig. 1–8. Hayes and Ulrich, Folio 95 U. S. G. S. illus. sheet, 1903, fig. 17. Cumings, Amer. journ. sci., 1903, ser. 4, **15**, p. 34, footnote. Foerste, Bull. sci. lab. Denison univ., 1910, **16**, p. 52, pl. 2, fig. 5.

Hebertella occidentalis sinuata Schuchert, Bull. 87, U. S. G. S., 1897, p. 229. Cumings, 32nd Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 908, pl. 34, fig. 3–3e.

Hebertella sinuata differs from *H. occidentalis* in the absence of the slight median depression near the beak of the pedicle-valve of the latter. This species is very common throughout the Richmond, and everywhere shows great similarity to *H. occidentalis*. The primary striations are coarser than those of the latter, but all intermediate stages can usually be found.

Since all the specimens from the Upper Maquoketa at Brainerd, Iowa, were coarsely striated, no differentation of two forms was indicated.

Length	Width	Convexity
30 mm.	40 mm.	25 mm.
32 mm.	36 mm.	21 mm.
16 mm.	29 mm.	15 mm.

Locality: — Maysville and Richmond; southern Ohio; Kentucky; Tennessee; Indiana; Iowa, etc.

HEBERTELLA CLERMONTENSIS, sp. nov.

Plate 1, fig. 3.

Shell small, length about four fifths of the width, with slight individual variation. Hinge-line a trifle less than the middle width of the shell; cardinal angles tend to squareness so as to produce an approximately rectangular outline.

The pedicle-valve has a medial ridge, gently convex at the anterior edge, but growing sharper toward the posterior margin where it merges into a pointed beak, that deviates but slightly from the vertical.

The brachial-valve is about equally convex with the pedicle and possesses a shallow sinus which begins at the anterior margin and continues nearly to the beak, where it merges into the general convexity of the shell.

Striations are well defined, almost coarse; thirty-eight to forty-four occur along the anterior margin. The lateral striae increase by bifurcation; the medial ones are always simple.

A typical specimen measured: —

Length	Width	Convexity	Striations of pedicle-valve
13 mm.	15 mm.	6 mm.	40

Locality: — Lower Maquoketa in the vicinity of Clermont, Iowa. Holotype, M. C. Z. 8,537.

HEBERTELLA (GLYPTORTHIS) INSCULPTA (Hall).

Orthis insculpta Hall, Pal. N. Y., 1847, **1**, p. 125, pl. 32, fig. 12. Billings, Geol. Canada, 1863, p. 167, fig. 150. Meek, Pal. Ohio, 1873, **1**, p. 99, pl. 9, fig. 1. Miller, Cinc. quart. journ. sci., 1875, **2**, p. 40. Emmons, Amer. geology, 1855, **1**, pt. 2, p. 195, pl. 9, fig. 12. Shaler, Mem. Geol. surv. Kentucky, 1876, **1**, p. 30.

Orthis (*Hebertella*) *insculpta* Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 435.

Hebertella insculpta Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, p. 222, pl. 5A, fig. 13. Cumings, 32nd Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 905, pl. 34, fig. 2–2d.

Glyptorthis insculpta Foerste, Bull. Sci. lab. Denison univ., 1914, **17**, p. 258 (gen. ref.).

Orthis bellarugosa Hall (not Conrad), 2d. Ann. rept. N. Y. state geol., 1883, pl. 35, fig. 22.

Three specimens from Clermont had the following dimensions: —

Length	Width	Greatest convexity
15 mm.	18 mm.	7 mm.
9 mm.	11 mm.	5 mm.
10 mm.	13 mm.	6 mm.

Locality: — Oxford, etc., Ohio; Indiana; Wilmington, Illinois; Wisconsin; Iowa; Minnesota; Tennessee.

DALMANELLA MACRIOR (Sardeson).

Orthis macrior Sardeson, Bull. Minn. acad. sci., 1892, **3**, p. 330, pl. 5, fig. 5–7.

Orthis (*Dalmanella*) *testudinaria* var. *emacerata* Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 445, pl. 33, fig. 23–24.

Orthis emacerata Sardeson, Amer. geol., 1897, **19**, p. 102, pl. 5, fig. 14–18, 28.

Shells subquadrangular, broadest at or near the hinge, nearly as long as wide.

Pedicle-valve convex; brachial nearly flat; concentric lines sometimes present. A single median plication is prominent near the pedicle-beak. The median fold grows wider and higher toward the anterior margin and is bounded by depressed areas.

The brachial-valve has a corresponding depression, and the striations resemble those of *D. rogata* Sardeson. There is a total lack of all minuter surface markings.

Typical specimens measured: —

Length	Width	Greatest convexity
11 mm.	12.5 mm.	4.5 mm.
11 mm.	13 mm.	5 mm.
9 mm.	10.5 mm.	4.5 mm.
13 mm.	15 mm.	5 mm.
6 mm.	7.5 mm.	3 mm.

The common Dalmanella found in the Maquoketa at Clermont has usually been called *D. emacerata*, but differs from it in having a deeper sinus and more pronounced fold, and in having the lateral margins more nearly parallel. Sardeson's name for the species may therefore be revived although he himself did not use it in his second paper.

Locality: — Maquoketa in Minnesota; Lower Maquoketa at Clermont, Iowa.

DALMANELLA CORPULENTA (Sardeson).

Orthis corpulenta Sardeson, Bull. Minn. acad. nat. sci., 1892, **3**, p. 330, pl. 5, fig. 8–10. Amer. geol., 1897, **19**, p. 107, pl. 4, fig. 11–19.

Orthis (*Dalmanella*) *testudinaria* var. *meeki* Winchell and Schuchert (non Miller), Geol. Minn., 1893, **3**, pt. 1, p. 445, pl. 23, fig. 25–29.

A few specimens appear to belong to this species, which is common in the Maquoketa of Minnesota but unknown elsewhere. The hinge is short, the form subcircular in neanic but rather elongate in adult specimens, the median fold is not strongly delineated, and the sinus is shallow. The convexity is not such as to suggest their trivial name, but it appears from Sardeson's description that this was an allusion to the condition of gerontic specimens.

Measurements: — The largest specimen is 12.75 mm. long, 13 mm. in greatest width, and 9 mm. wide at the hinge. A smaller one is 8.75 mm. long, 9.25 mm. wide, and 7 mm. wide at the hinge.

Locality: — A rare species in the Lower Maquoketa at Clermont, Iowa, previously reported only from the same formation at Granger and Spring Valley, Minn.

PLAESIOMYS SUBQUADRATA Hall.

Orthis subquadrata Hall, Pal. N. Y., 1847, **1**, p. 121, pl. 32A, fig. 1. Geol. Wisc. 1862, **1**, p. 54, fig. 1, 2. Meek, Pal. Ohio, 1873, **1**, p. 94, pl. 9, fig. 2. Miller, Cincinnati quart. journ. sci., 1875, **2**, p. 38. White, 2d. Ann. rept. Indiana bur. state geol., 1880, p. 484, pl. 1, fig. 3–5. Shaler, Mem. Geol. surv. Kentucky, 1876, **1**, p. 22, pl. 7. Keyes, Missouri geol. surv., 1895, **5**, p. 60.

?*Orthis subquadrata* Billings, Geol. Canada, 1863, p. 165, fig. 146.

Platystrophia subquadrata Hall, 36th Rept. N. Y. state mus. nat. hist., 1884, p. 75, pl. 3, fig. 4.

Plaesiomys subquadrata Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, p. 194, 196, 222, pl. 5A, fig. 17–19.

Orthis (*Dinorthis*) *subquadrata* Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 428, pl. 32, fig. 46–50. Whiteaves, Pal. foss. Canada, 1897, **3**, pt. 3, p. 176.

Dinorthis subquadrata Hayes and Ulrich, Folio 95 U. S. G. S. illus. sheet, 1903, fig. 7, 8. Cumings, 32nd Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 904, pl. 34, fig. 1–1b.

Two specimens of this common species were found at Clermont by the writer. This fossil is very characteristic of the Upper portion of the Maquoketa shale and is found plentifully at Spring Valley, Minnesota. These rocks are known to be of about the same age as the Maquoketa of Iowa, so one must look for the cause of the scarcity of *Dinorthis subquadrata* in the shales at Clermont.

This species is more convex than the Orthidae with which it is associated. It has a shallow sinus on the pedicle-valve, but not nearly so pronounced a one as that of its close relative, *Dinorthis proavita*. One feature separates it conclusively from the other species in this locality; the posterior lateral radiating striae curve so strongly outward that a few of them run out on the cardinal edge before reaching the lateral margins. Striae increase by bifurcation on the pedicle-valve and by intercalation on the brachial.

Winchell and Schuchert have pointed out how *Dinorthis meedsi* developed from *D. pectinella* var. *sweeneyi* by the multiplication of striae; how this development was carried further in *D. meedsi* var. *germana*, and how this form is closely linked with *Plaesiomys subquadrata*. *Dinorthis proavita* and *Plaesiomys subquadrata* show a reversion to ancestral characteristics in the simplicity of the striae and the rareness with which interpolation and bifurcation takes place beyond the early neanic stage.

Length	Width	Greatest convexity
26 mm.	30 mm.	16 mm.

Locality: — Richmond, Ind.; Spring Valley, Minnesota; Wilmington, Illinois; Warren and Jefferson counties, Missouri; Lattners, Clermont, Iowa; Iron Ridge, Wisconsin; Lake Winnipeg, Canada; Anticosti; Texas.

DINORTHIS PROAVITA Winchell and Schuchert.

Plate **1**, fig. 4.

Orthis proavita Winchell and Schuchert, Amer. geol., 1 April, 1892, **9**, p. 290.
Orthis petrae Sardeson, Bull. Minn. acad. nat. sci., 9 April, 1892, **3**, p. 332, pl. 5, fig. 18–21.
Orthis (*Dinorthis*) *proavita* Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 431, pl. 32, fig. 51–57. Whiteaves, Pal. foss. Canada, 1895, **3**, pt. 2, p. 120; 1897, **3**, pt. 3, p. 176.
Dinorthis proavita Schuchert, Bull. 87, U. S. G. S., 1897, p. 216.

Several specimens of this species were found at Clermont and resemble in all essentials the types from Spring Valley, Minnesota. The striae increase by interpolation on the brachial and by bifurcation on the pedicle-valve. The latter is somewhat elevated at the umbo, flattened and in some cases concave toward the lateral and anterior margins with a slight mesial elevation. The distinguishing characteristic of this form is the brachial-valve which is always convex and possesses a well-pronounced sinus. No other species of Orthidae present at Clermont has the very noticeable sinus of this species.

Dinorthis proavita and *D. iphigenia* Billings are superficially similar, but they have the fold and sinus reversed. The latter has a greater number of striae and is found only in the Trenton of Canada.

Dinorthis proavita at Clermont, probably the most common species, is smaller than most of the other Orthidae.

Length	Width	Greatest convexity
8.5 mm.	10 mm.	2.5 mm.
11.5 mm.	16 mm.	5 mm.
17.5 mm.	21 mm.	8 mm.

Locality: — Common in the upper portion of the Maquoketa at Spring Valley, Minnesota and Wilmington, Illinois; Lower Maquoketa at Clermont, Iowa. M. C. Z. 8,538.

STROPHOMENIDAE.

PLECTAMBONITES RUGOSUS (Meek).

Leptaena rugosa James, Cat. fossils Cincinnati group, 1871.
Leptaena sericea var. *rugosa* Meek, Pal. Ohio, 1873, **1**, pt. 2, pl. 5, fig. 3f, g, h.
Plectambonites rugosa Foerste, Bull. sci. lab. Denison univ., 1912, **17**, p. 123, pl. 1, fig. 7a–e; pl. 10, fig. 7a–d.
Leptaena aspera James, Cinc. quart. journ. sci., 1874, **1**, p. 151.
?*Plectambonites sericeus* var. Ruedemann, Bull. 49, N. Y. state mus., 1901, p. 18, pl. 1, fig. 6, 7; ibid., 8, p. 525.

The typical specimens of this species were found in the Eden at Cincinnati, Ohio. The name *rugosa* was applied because of the roughened exterior surface and the oblique wrinkles along the hinge-line.

The concentric banding and filming is often absent as well as the consequent thickening of the valves anteriorly. This is the case with most of the specimens from the Maquoketa near Clermont, Iowa; the surface is comparatively smooth except for concentric striae present on some forms.

Plectambonites rugosus has a considerable vertical range; it is most abundant in the Eden, but similar forms have been found in the Waynesville and Liberty members of the Richmond. Much variation of outline occurs within the species, and on the same slab examples may be seen representing all stages between the semielliptical and the elongate quadrangular. These shells grow more in width than length, and environment often differentiates them so greatly as to raise the question whether all the specimens under discussion should be considered one species.

Length	Width	Convexity
8 mm.	14.5 mm.	2 mm.
7 mm.	12 mm.	2.5 mm.
8 mm.	12 mm.	2 mm.

Locality: — Eden, Cincinnati, Ohio; Richmond (Maquoketa) at Clermont, Iowa.

LEPTAENA UNICOSTATA (Meek and Worthen).

Plate **2**, fig. 5.

Leptaena (n. sp.?) Owen, Geol. surv. Wisconsin, Iowa, Minnesota, 1852, pl. 2B, fig. 3.

Strophomena unicostata Meek and Worthen, Geol. surv. Illinois, 1868, **3**, p. 335, pl. 4, fig. 11. Whitfield, Geol. Wisc., 1882, **4**, p. 262, pl. 12, fig. 14.

Rafinesquina unicostata Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, pl. 15A, fig. 39, pl. 20, fig. 25.

Leptaena unicostata Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 411, pl. 32, fig. 6–9. Whiteaves, Pal. foss. Canada, 1897, **3**, pt. 3, p. 174.

This form occurs plentifully on thin slabs of limestone at the very top of the Ordovician in the Maquoketa at Patterson's Spring, near Brainerd, Iowa. The specimens lack any sign of the wrinkling present in some of the examples from Spring Valley, Minnesota. This species can be distinguished from the American form now called *Leptaena tenuistriata* Sowerby by the obsolete wrinkling, the large mid-rib and the large bilobed diductor scars of the pedicle-valve. *Strophomena nitens* Billings, an Anticostian form, closely resembles *L. unicostata* exteriorly but not interiorly.

Length	Width	Convexity
14 mm.	21 mm.	3 mm.
12 mm.	20 mm.	5 mm.

Locality: — Richmond; Savannah, and Wilmington, Illinois; Delafield, Wisc.; Spring Valley and Granger, Minn.; Lattners, Brainerd, Iowa; Rapids of Nelson River, Lake Winnipeg, Manitoba; Texas, etc. M. C. Z. 8,546.

LEPTAENA RAYMONDI, sp. nov.

Plate 2, fig. 3, 4.

Shell small; hinge width 15 to 17 mm., which is the greatest width of the shell. Length, 9 to 10 mm. Pedicle-valve convex and strongly deflected near the anterior margin. The concave brachial-valve follows closely the convexity of the other. Cardinal area on the pedicle-shell narrow, never exceeding 2 mm. in width, with a small triangular deltidium. No interior known.

The surface of some specimens is marked by fine radiating striae which grow heavier on the deflected area of the pedicle-valve. In most cases these striations are not noticeable and never attain the prominence of those on *L. unicostata*, which is common in the Upper Maquoketa. A strong mesial line is present on the pedicle-valve and often bifurcates before it reaches the anterior margin, in some specimens very near the hinge line.

Locality: — Lower Maquoketa at Clermont, Iowa. Holotype, M. C. Z. 8,545.

Several species of Rafinesquina and Strophomena occur plentifully in the Upper Maquoketa at localities north and west of Clermont, Iowa. *R. kingi* (Whitfield), *S. cardinalis* (Whitfield), and *S. fluctuosa occidentalis* Foerste, common in the Maquoketa of other Upper Mississippi Valley localities, were not found by the writer.

A general characteristic of the new species of Rafinesquina and Strophomena described below is that they are considerably smaller than species from other localities in the Richmond. This dwarfing may have been the first manifestation of the force which drove both genera to extinction at the close of the Ordovician.

Although dwarf faunas were common in Palaeozoic times, as they are now, it is not always easy to determine the cause. In the case of the one under discussion, there were probably many contributory causes. It appears that any change from the usual environmental conditions affect the sensitive soft parts of marine invertebrates. Professor Shimer says on this point, "Whatever ill or good conditions the animal is subjected to are expressed in the shell, as moist and dry summers are recorded by the annual rings of exogenous trees."

With the universal uplift that came as the grand finale to the Ordovician period, many changes were wrought that had great influence upon life in the sea. With the receding of the waters, lakes, and shallow bays were formed that lost their connection with the main sea. The life entrapped in these basins must have been subjected to new environmental conditions. A change in the chemical constitution resulting from a freshening of the sea-water due to the new drainage; a concentration of salt; an abnormal increase in hydrogen sulphide and other gases; mud and other impurities; variations in the temperature and the depth of water are agencies in dwarfing according to Professor Shimer.

It seems that in the case of the Strophomenae and Rafinesquinae from Clermont, the ingress of mud was probably the determining factor. Upon examination of the fine-grained shales that contain these fossils, it is easy to imagine that conditions during the Maquoketa deposition in this region were not unlike those that exist today in the Mediterranean Sea. De Lapparent noticed that while the fauna of the western Mediterranean was dwarfed, that of the eastern part was still further affected. He attributed this to the presence in the water of the eastern basin of fine particles of mud, which sank to the bottom only very slowly. Fine grains of mud taken into the tender soft parts of these brachiopods might easily have caused an irritation that would result in the prevention of normal growth.

RAFINESQUINA ALTIDORSATA, sp. nov.

Plate 2, fig. 2.

Shell small and highly convex, almost hemispherical, with the greatest convexity in mature specimens a little nearer the beak than the anterior margin, although very nearly mid-way between.

The more prominent radiating lines of the pedicle-valve occur at intervals of less than one millimeter and the intermediate spaces are occupied by four to six finer striae.

The interior of the brachial-valve is thickened along the anterior margin. Three ridges running lengthwise to the hinge embrace the four adductor muscle-scars.

Typical specimens measured: —

Width	Length	Greatest convexity
22 mm.	19 mm.	11 mm.
24.5 mm.	19 mm.	10 mm.
26 mm.	19.5 mm.	13.5 mm.

The common Maquoketa representative of the genus at Delafield, Wisconsin and Spring Valley, Minnesota, is *R. kingi* (Whitfield), but its place was taken at Clermont by two new forms, *R. subquadrata* and

R. altidorsata. They are much smaller than *R. kingi* and show the tendency to dwarfing that characterizes this fauna. *R. subquadrata* and *R. altidorsata* differ greatly from *R. kingi* and seem to be the first dwarf forms described from the Maquoketa.

Locality: — Lower Maquoketa at Clermont, Iowa. Holotype, M. C. Z., 8,544.

RAFINESQUINA SUBQUADRATA, sp. nov.

Plate **2**, fig. 1.

Shell of medium size, with a tendency to squareness; width at hinge-line usually maintained and occasionally slightly exceeded as far as two thirds the distance to the anterior margin. Cardinal angles regularly square, but in some specimens slightly alate.

Striations of the pedicle-valve alternate; usually three, sometimes two or four finer striae embraced by two coarser ones in the region directly anterior to the beak. All regularly grow heavier as the shell grows older and increase by implantation, so that four or five finer striae are embraced by two coarser. The greatest convexity of the pedicle-valve is between one half and two thirds the distance from beak to anterior margin; at this point there is a rather sharp inflection of the shell.

The striations on the brachial correspond to those of the pedicle-valve, but are not so pronounced. The concavity of this shell follows closely the convexity of the other like two nested cups.

The cardinal area is narrow, scarcely two millimeters wide at the most. Pedicle-opening very minute, just visible to the eye.

Three typical specimens measured: —

Width	Length	Greatest convexity
27 mm.	26.5 mm.	10 mm.
27 mm.	26.5 mm.	11 mm.
27 mm.	30 mm.	12 mm.

Locality: — Lower Maquoketa at Clermont, Iowa. Holotype, M. C. Z. 8,543.

RAFINESQUINA RUGULIFERA, sp. nov.

Rafinesquina alternata var. *loxorhytis* Winchell and Schuchert (not Meek), Geol. Minn., 1893, **3**, pt. 1, p. 407, pl. 31, fig. 35–37; pl. 32, fig. 59, 60.

Shell much broader than long, widest at the hinge, which projects into broad "ears" which are demarked by shallow depressions. Pedicle-valve gently and rather evenly convex, highest in front of the middle. The brachial shell, except in the umbonal region, follows the curvature of its opposite. The striae of the umbonal region are of uniform size, but towards the front they show distinct alternations, and there are from one to three fine striations between each pair of coarse ones, the number varying with the distance from the margin. When the shell is partially exfoliated, rows of conspicuous pores are disclosed in the furrows between the striae. Some specimens show distinct wrinkles on the sides near the hinge. Some are located nearly at right angles with the hinge, others diagonally, the variable position suggesting pathologic origin for these features.

Measurements: — A specimen from the Lower Maquoketa near Clermont is 41 mm. long, and about 65 mm. wide; one figured by Winchell and Schuchert is 40 mm. long and 60 mm. wide.

Rafinesquina alternata var. *loxorhytis* was a name suggested by Meek (Pal. Ohio, 1873, 1, p. 91) in a brief description which was not accompanied by a figure. The variety does not appear to have been identified successfully away from Cincinnati, and, as Cumings has remarked, (32d Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 928) the characteristic which appeared most important to the describer may not be a reliable one. Meek relied upon the extended form and obliquely wrinkled lateral extremities for the identification of this variety, but oblique wrinkles near the cardinal margin have proven in many cases to be the accompaniment of individual senescence or result of accident. The specimens from the Richmond of Indiana identified as *R. alternata loxorhytis* by Cumings lacked the wrinkles.

Winchell and Schuchert found a large Rafinesquina at Spring Valley, Minnesota, which they illustrated under this name, but which has recently been referred to *R. kingi* Whitfield (Bassler, Bull. 92, pt. 2, U. S. N. M., 1915, p. 1087.) If Whitfield's description and illustrations are correct, then the Minnesotan form cannot be *R. kingi*, for its author stated that that species showed no alternations of striae, and the figure shows the Wisconsin shell to be much longer than that from Minnesota.

Comparison with *R. alternata loxorhytis* cannot be satisfactory in our present ignorance of that variety, but Meek described it as having acutely angular, flattened, scarcely deflected cardinal angles, while the present species has convex "ears" which are set off by a conspicuous depression. It also has a much broader form than any of the shells which are usually designated as varieties of *R. alternata*.

Locality: — In the Maquoketa near Spring Valley, Minnesota, and Clermont, Iowa; rare at the latter place.

STROPHOMENA NEGLECTA (James).

Strophomena filitexta Meek (not Hall), Pal. Ohio, 1873, **1**, pt. 2, p. 83, pl. 6, fig. 5.

?*Strophomena filitexta* White, U. S. G. & G. S. W. 100th mer., 1875, **4**, p. 69, pl. 4, fig. 8.

Hemipronites filitextus Miller, Cinc. quart. journ. sci., 1875, **2**, p. 43.

Streptorhynchus filitextus (part) Hall, 2d. Ann. rept. N. Y. state geol., 1883, pl. 42, fig. 10, 15 (not fig. 11–14); pl. 39, fig. 1–7.

Strophomena filitexta Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, pl. 9A, fig. 10, 15 (not fig. 11–14); pl. 11A, fig. 3.

Streptorhynchus neglecta James, Paleontologist, 1881, **5**, p. 41.

Strophomena neglecta Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 388. Foerste, Amer. geol., 1903, **31**, p. 338. Cumings, 32d Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 934, pl. 38, fig. 1–1b. Foerste, Bull. sci. lab. Denison univ., 1912, **17**, pl. 5, fig. 1, 3; pl. 7, fig. 5; pl. 9, fig. 1; pl. 11, fig. 10.

All representatives of this species were found in a ravine north of Clermont, Iowa, and none in the neighboring outcrops. They conform well to the types figured and described by Foerste, although the average size is somewhat smaller. They all lack the vertical wrinkling along the hinge-line of *Strophomena vetusta*. The cardinal angles in all cases are acute, and no specimen shows the rectangular boxing of the postero-lateral angles.

Measurements: — Smallest specimen — width, 40 mm., length, 25.5 mm. Largest specimen — width, 56 mm., length, 35.5 mm. Average specimen — width, 44 mm., length, 27 mm.

Locality: — The Richmond at Oxford, Clarksville, Waynesville, Ohio; Indiana; and the Maquoketa at Savannah, Illinois; on Manitoulin Island, Lake Huron; Anticosti; and Stony Mountain, Manitoba.

STROPHOMENA ACUTA Winchell and Schuchert.

Plate **1**, fig. 5.

Strophomena neglecta var. *acuta* Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 388, pl. 31, fig. 6, 7.

Strophomena acuta Foerste, Bull. sci. lab. Denison univ., 1912, **17**, p. 115, pl. 7, fig. 3a–d; pl. 9, fig. 13a, b.

Three good specimens from Clermont, Iowa, show a general similarity to the figured types from the Maquoketa at Spring Valley, Minnesota. All are shorter than those in Professor Schuchert's collection, and the anterior margins are less pointed. Very slight wrinkling is discernible on the valves near the hinge-line, and in one specimen is almost obsolete.

The striae are more distinct on the brachial- than on the pedicle-valve; clearly alternating, usually three or four, rarely two or five, finer between two coarser ones. The finer striae vary in intensity and in places are undulatory; the coarser in all cases are less erratic than the finer. Seven or eight of the prominent ones are counted in 5 mm. at the anterior margin.

One specimen has dimensions as follows: — Width along hinge-line, 28.5 mm.; across middle, 24 mm.; length of pedicle-valve, 20.5 mm.; of the brachial, 20 mm.; greatest convexity, 8 mm. at 13.5 mm. from the beak; height of cardinal area, 3.5 mm. This represents the medium of the three specimens. The largest had a width at the hinge of 37.8 mm. and length of pedicle-valve of 23 mm. The smallest had width at hinge 21.2 mm., and length of pedicle-valve 16.2 mm. A specimen from the type-locality measured by Foerste corresponded nearly to the first cited above, the main difference being a length of pedicle-valve greater by 1.2 mm. in the type.

Locality: — Richmond (Maquoketa); Spring Valley, Minnesota, and Clermont, Iowa. M. C. Z. 8,539.

STROPHOMENA NUTANS Meek.

Strophomena (*Hemipronites*) *nutans* Meek, Pal. Ohio, 1873, **1**, pt. 2, p. 77, pl. 6, fig. 1.

Hemipronites nutans Miller, Cinc. quart. journ. sci., 1875, **2**, p. 46.

Streptorhynchus nutans Miller, N. A. geol. pal., 1889, p. 378.

Strophomena nutans Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, p. 251, pl. 8, fig. 11; pl. 9A, fig. 5–7; pl. 11A, fig. 6, 7. Foerste, Amer. geol., 1903, **31**, p. 338. Cumings, 32d Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 936, pl. 38, fig. 5–5e. Foerste, Bull. sci. lab. Denison univ., 1912, **17**, p. 68, pl. 3, fig. 2a–e; pl. 9, fig. 15; pl. 10, fig. 2a–c; pl. 3, fig. 2 b; pl. 11, fig. 8; pl. 10, fig. 3a–d; pl. 9, fig. 16.

Several specimens of *Strophomena nutans* were found in the Lower Maquoketa four miles west of Clermont. They were all smaller than *S. concordensis* described by Foerste; but it is possible that he would call these forms depauperate gerontic examples of that species. The largest has a width of 28 mm., a length of 23.5 mm., and a greatest convexity of 10.5 mm. The average specimen measures 21 mm. in width; 18 mm. in length; and 7 mm. in convexity. These dimensions alone would suggest that this form belongs to the more common *Strophomena nutans* and not the larger variety, *S. concordensis*, specimens of which frequently attain a width of 42 mm., a length of 30 mm., and a convexity of 11 to 15 mm.

Locality: — This is a common Richmond fossil occurring in the Blanchester division of the Waynesville bed in Butler, Warren, and Clinton Counties, Ohio; also in the environs of Richmond, Indiana.

STROPHOMENA WISCONSINENSIS Whitfield.

Plate **1**, fig. 7, 8.

Strophomena wisconsinensis Whitfield, Geol. Wisc., 1882, **4**, p. 263, pl. 12, fig. 11–13. Hall and Clarke, Pal. N. Y., 1892, **8**, pt. 1, p. 251, pl. 11A, fig. 1, 2. Foerste, Bull. sci. lab. Denison univ., 1912, **17**, p. 108, pl. 7, fig. 1a–e; pl. 9, fig. 5a–e.

Evidently similar to specimens from the type-locality at Delafield, Wisconsin are the two from Clermont, Iowa. They are characterized by the great convexity of the brachial-valve which has a sudden flattening toward the posterior part, and the regular generic depression near the beak. The cardinal area of the pedicle-valve is almost parallel to the flattened surface.

One specimen is distinctive not only for its peculiar specific idiosyncrasies, but also for a pathologic condition shown in the arrestment of growth across the middle of the brachial-valve.

Length, 17 mm., width, 24 mm., greatest convexity, 9.5 mm.

The main difference between the specimens from Clermont and the types is that the cardinal area is not nearly so high in the former as in the latter.

Locality: — Delafield, Wisc., and Clermont, Iowa. M. C. Z. 8,541.

STROPHOMENA PLANODORSATA Winchell and Schuchert.

Strophomena planodorsata Winchell and Schuchert, Amer. geol. 1892, **9**, p. 286. Geol. Minn., 1893, **3**, pt. 1, p. 393, pl. 31, fig. 8–10. Foerste, Bull. sci. lab. Denison univ., 1912, **17**, p. 109, pl. 7, fig. 4a, b, 7a, b, 8; pl. 9, fig. 6a, b, 7, 8a, b, 9, 11, 12, 14a, b.

At Patterson's Spring near Brainerd, Iowa, the Niagara limestone is well exposed. Below it lies a zone of shale six feet thick. Both are quite barren of fossils. Next in descent is a highly fossiliferous calcareous shale, from which slabs were dug that literally teemed with fossil shells. Several of these slabs were obtained, and although Rafinesquina is well represented on them, Strophomena is absent with the single exception of a pedicle-valve of *Strophomena planodorsata*.

STROPHOMENA ABSCISSA, sp. nov.

Plate 1, fig. 6.

Shell small, roughly triangular in outline. Hinge-line straight; cardinal angles often mucronate, especially in the younger specimens. Greatest height of the cardinal area varies from one to two millimeters. The surface of the brachial-valve is abruptly deflected from three to six millimeters posterior to the margin, the angle formed measuring 90°–105°. This sudden deflection is a highly characteristic feature of this form and makes confusion with any other Maquoketa species impossible.

The pedicle-valve is weakly convex at the beak, then turns and follows the shape of the brachial-shell, producing a cup-like cavity, which lacks the sharp angles of the brachial-valves.

Striae are distinctly alternating on the brachial-valve, from three to nine finer between two coarser ones. The coarser striae become more pronounced upon the vertical part of the brachial-valve; the finer intercalated ones tend to become obscure on this area, with the exception of one to three in each series which become coarse.

This makes the deflected anterior region of the shell quite distinctly striated and sharply contrasts it with the finely marked posterior part.

Specimens vary little in size, a typical one measuring 15 mm. along the hinge-line, 10 mm. in length, 5 mm. in depth.

Locality: — Lower Maquoketa at Clermont, Iowa. Holotype, M. C. Z. 8,540.

STROPHOMENA LAMINATA, sp. nov.

Plate 1, fig. 9, 10.

This form is smaller than the average for the genus, and less coarsely striated. It resembles no other species in this fauna so closely that confusion might result, for it possesses a characteristically laminated brachial-valve which is unique.

Shell semiovate in outline; slightly wider than long, with the greatest convexity a little anterior of the middle. In the adult the brachial-valve is marked by lamellose growth-lines that suggest premature senility. Striations on the brachial-valve are fine, from twelve to fifteen within 5 mm. on the anterior margin. They show an unpronounced alternation of two coarser encompassing one or two finer striae. On the pedicle-valve they are finer, from seventeen to twenty in 5 mm. They show the same alternation as those of the brachial-shell.

A typical specimen measured: —

Width	Length	Greatest convexity
17 mm.	15 mm.	6 mm.

Locality: — Lower Maquoketa at Clermont, Iowa. Holotype, M. C. Z. 8,542.

STROPHOMENA sp. ind.

A small specimen 16 mm. wide along the hinge-line, 12.5 mm. long, and with a convexity of 3 mm., which equals the greatest height of the cardinal area, shows a pathological dwarfed condition. Striae are fine, five or six in 2 mm. and show no alternation. Concentric lines which tend to be prominent and lamellose are present. Concentric striae are prominent near the posterior edge of the pedicle-valve and form file-like indentations upon the radial striae. Retardation of growth is noticeable on the brachial-valve where the first concentric line is badly malformed. The pathological condition is so marked that it is difficult to identify the species and justifies a separate description.

PORAMBONITIDAE.

PARASTROPHIA DIVERGENS Hall and Clarke.

Parastrophia divergens Hall and Clarke, Pal. N. Y., 1895, 8, pt. 2, p. 222, 366, pl. 63, fig. 4–7. 48th Rept. N. Y. state mus., 1897, 2, p. 364; pl. 10, fig. 11–14. 14th Rept. N. Y. state geol., 1897, p. 364, pl. 10, fig. 11–14.

Shell of medium size; brachial-valve strongly, pedicle-valve weakly, convex. The beak is erect; and the surface slopes gently to the lateral margins. Half-way to the anterior margin the surface becomes abruptly depressed, forming broad, deep, characteristic sinus, which contains three well-defined plications. Two less-defined ribs occur on each lateral slope.

The brachial-valve is well rounded in the posterior region; the median fold becomes evident half-way to the anterior margin where it finally is well defined. The fold bears four plications; each lateral slope bears two. The type-specimens from Wilmington have from three to five plications on the median fold and three on each lateral slope. All plications, and also the fold and sinus fade away in the umbonal region, which is smooth.

Width	Length	Greatest convexity
15 mm.	12 mm.	10 mm.

In general, this representative of Parastrophia closely resembles the type from Wilmington, but differs in having fewer plications and a lesser convexity.

Locality: — Maquoketa (Fernvale) at Wilmington, Illinois, and Lower Maquoketa at Clermont, Iowa.

RHYNCHONELLIDAE.

RHYNCHOTREMA CAPAX (Conrad).

Atrypa capax Conrad, Journ. Acad. nat. sci. Phil., 1842, **8**, p. 264, pl. 14, fig. 21. Hall, Amer. journ. sci., 1844, **47**, p. 109.

Atrypa increbescens Hall (part), Pal. N. Y., 1847, **1**, p. 146, pl. 33, figs. 131, 13k–13y. Billings, Can. nat. geol., 1856, **1**, p. 207, fig. 15, 16. Hall, 13th Rept. N. Y. state cab. nat. hist., 1860, p. 66, fig. 6, 7, 9–11.

Rhynchonella increbescens Hall (part) Geol. Wisc., 1862, **1**, p. 123, pl. 11, fig: 2.

Rhynchonella capax Billings, Geol. Canada, 1863, p. 211, fig. 213. Safford, Geol. Tennessee, 1869, p. 275, fig. 4–6. Meek, Pal. Ohio, 1873, **1**, pt. 2, p. 123, pl. 11, fig. 2. Miller, Cinc. quart. journ. sci., 1875, **2**, p. 17. Roemer, Leth. Geog., **1**, Leth. Pal. Atlas, 1876, p. 4, fig. 13a. White, 2d Ann. rept. Indiana bur. state geol., 1880, p. 489, pl. 1, fig. 9–11. 10th Rept. state geol. Indiana, 1881, p. 121, pl. 1, fig. 9–11. Whitfield, Geol. Wisc., 1882, **4**, p. 263, pl. 12, fig. 26, 27. Chamberlin, ibid., 1883, **1**, p. 155, fig. 30. Keyes, Missouri, Geol. surv., 1895, **5**, p. 99, pl. 41, fig. 12.

Rhynchotrema capax Winchell and Schuchert, Geol. Minn., 1893, **3**, pt. 1, p. 462, pl. 34, figs. 30–34. Hall and Clarke, Pal. N. Y., 1893, **8**, pt. 2, p. 183, 185, pl. 56, fig. 14–18, 20–27; pl. 83, fig. 31. Whiteaves, Pal. foss. Canada, 1895, **3**, pt. 2, p. 121; 1897, **3**, pt. 3, p. 178. Cumings, 32d Ann. rept. Dept. geol. nat. res. Indiana, 1908, p. 931, pl. 36, fig. 6–6h.

This well-known species is quite plentiful in several exposures of the Lower Maquoketa at Clermont, Iowa. The shell is of medium size, and varies greatly in shape with age. Some mature specimens were more convex than their diameter in any other direction. The posterior lateral margins meet the beak sharply in young shells, but become more rounded in the adult.

The brachial-valve is always a little more convex than the pedicle and marked by a mesial ridge nearly flat and topped with four plications. This continues about two thirds the way to the beak which is strongly incurved; lateral slopes bear from four to eight simple plications.

The pedicle-valve terminates abruptly in a pointed beak which becomes strongly incurved upon that of the other shell in adults. The mesial sinus is deep and well defined in mature examples, bearing three or four sharp plications; lateral slopes each have five to seven simple striations.

The entire surface of both valves is marked by numerous very regular, strongly zigzag, and prominent lines of growth.

Rhynchotrema capax is larger than *R. increbescens* with which it is sometimes confused and has a greater convexity and thicker valves.

This species varies much in the development from the young to the adult form and has caused the name of *R. capax* to cover a multitude of faulty identifications.

Locality: — Richmond at Richmond, Indiana; Oxford, etc., Ohio; Illinois; Iowa; Tennessee; Missouri; Wisconsin; Minnesota; Anticosti; Lake Winnipeg, Manitoba; Fort Churchill, Hudson Bay, etc.

ZYGOSPIRA TANTILLA, sp. nov.

Shell small, biconvex, the pedicle-valve sharply keeled in the umbonal region, the anterior edge sharp. The brachial-valve is convex at the umbo, becomes flattened in front, with a broad shallow median sinus. The surface is covered with fine plications, the median one on the brachial-valve slightly thicker than the others. On either side of the median plane there are ten to twelve ribs.

Measurements: — The largest specimen is 5.75 mm. long and 5.50 mm. wide. A small one is 4 mm. long and 3 mm. wide.

This species is very like *Z. recurvirostris,* and differs from the other Richmondian forms in its small size. It is a less robust shell than *Z. recurvirostris,* and has fewer plications than *Z. modesta.* It is not unlike *Z. kentuckiensis,* but is smaller, less plump, and that species does not appear to show an enlarged median plication.

Locality: — Twelve specimens were collected from the Lower Maquoketa near Clermont, Iowa. Holotye, M. C. Z. 8,547.

EXPLANATION OF THE PLATES.

PLATE 1.

PLATE 1.

Fig. 1.— *Plectorthis* (*Austinella*) *whitfieldi* (N. H. Winchell). A pedicle-valve. × 1.35.

Fig. 2.— *Plectorthis* (*Austinella*) *kankakensis* (McChesney). A pedicle-valve. × 1.31.

Fig. 3.— *Hebertella clermontensis* Bradley. A pedicle-valve, the holotype. × 2.23.

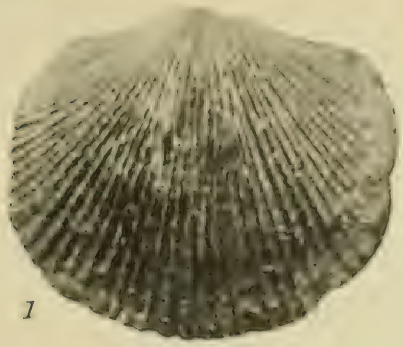
Fig. 4.— *Dinorthis proavita* Winchell and Schuchert. A pedicle-valve. × 1.32.

Fig. 5.— *Strophomena acuta* Winchell and Schuchert. A brachial-valve. × 1.85.

Fig. 6.— *Strophomena abscissa* Bradley. The brachial-valve of the holotype. × 2.00.

Fig. 7, 8.— *Strophomena wisconsinensis* Whitfield. Cardinal and dorsal views of a specimen. × 2.00.

Fig. 9, 10.— *Strophomena laminata* Bradley. Pedicle- and brachial-valves of the holotype. Fig. 9, × 1.93; fig. 10, × 2.10.



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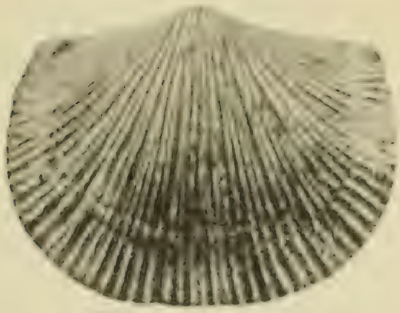

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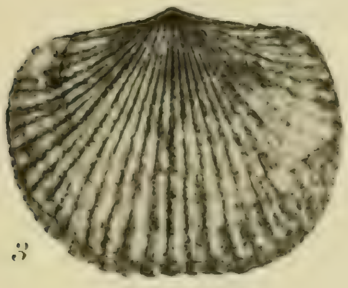

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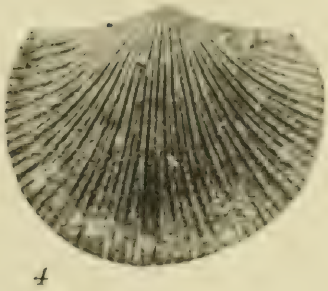

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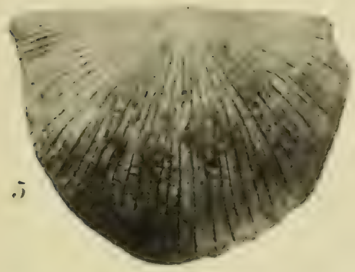

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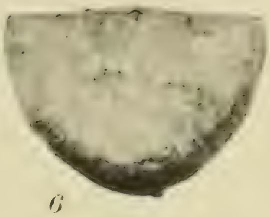

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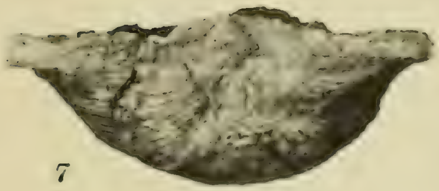

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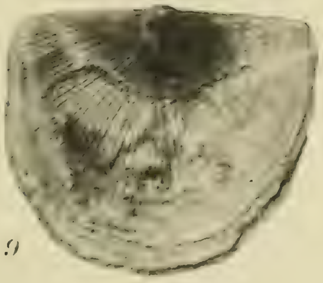

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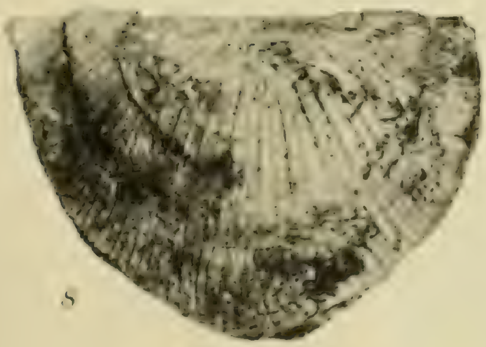

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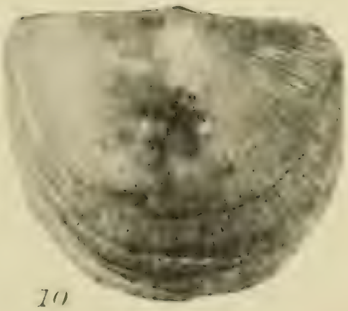

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PLATE 2.

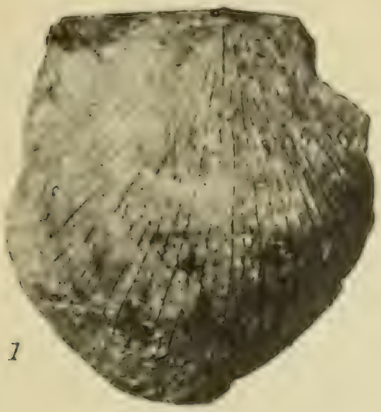
PLATE 2.

Fig. 1.— *Rafinesquina subquadrata* Bradley. A pedicle-valve, the holotype. × 1.68.

Fig. 2.— *Rafinesquina altidorsata* Bradley. A pedicle-valve, the holotype. × 1.46.

Fig. 3, 4.— *Leptaena raymondi* Bradley. Pedicle- and brachial-valves of the cotypes. × 1.85.

Fig. 5.— A slab of limestone with numerous specimens of *Leptaena unicostata* (Meek and Worthen) and some other fossils, notably *Plectambonites rugosus* (Meek), on its surface. From the Upper Maquoketa near Brainerd, Iowa. × 0.44.



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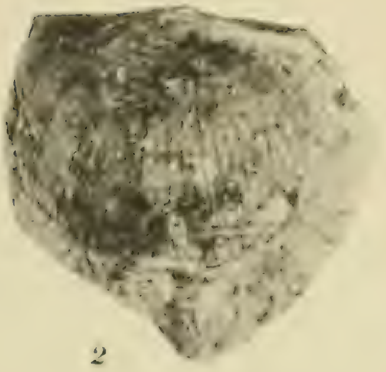

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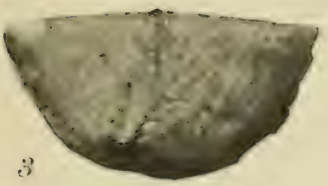

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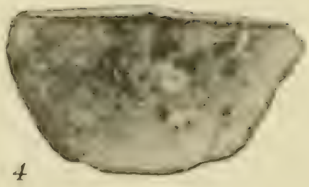

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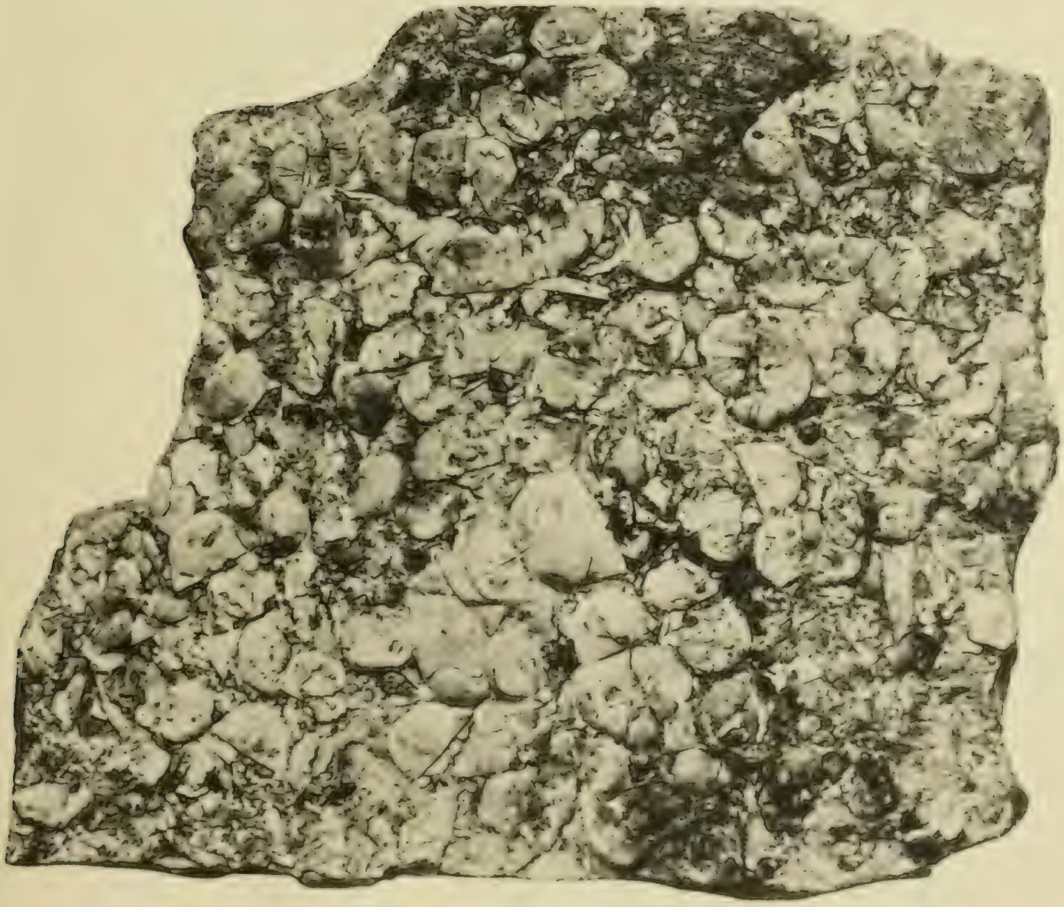

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Bulletin of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE.
Vol. LXIV. No. 7.

CHINESE ANTS.

By William Morton Wheeler.

CAMBRIDGE, MASS., U. S. A.:
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April, 1921.

No. 7.— *Chinese Ants.*

By William Morton Wheeler.

Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 151.

Within the past months I have received several small collections of Chinese ants. Some of them were made in Soochow, Mokanshan, and other localities by Prof. N. Gist Gee, one was made in Hong-kong by Mr. Terry and contributed by Dr. F. X. Williams, of Honolulu, one in various localities in southern China by Mr. F. Muir, and one in Canton by Prof. C. W. Howard. Although several species of Formicidae have been recorded from China, their distribution is so imperfectly known that it seems advisable to publish a list of my specimens, especially as everything pertaining to the fauna and flora of eastern Asia is of interest in connection with recent discussions of the problems of geographical distribution. Most of the ants received from Professor Gee, including several singular new species and some heretofore known only from Japan, belong, of course, to the Palaearctic fauna, whereas those from southern China are mostly identical with well-known species from India, Burma, and Siam and therefore belong to the Indomalayan fauna.

FORMICIDAE: PONERINAE.

1. STICTOPONERA MENADENSIS Mayr subsp. BICOLOR Emery.

A single worker from Hong-kong (Terry). Known from India, Burma, Tenasserim, the Malay Peninsula, and China.

2. DIACAMMA RUGOSUM (Le Guillou) subsp. GEOMETRICUM (F. Smith) var. ANCEPS Emery.

Three workers and an imperfect male from Hong-kong (Terry), the type-locality.

3. BOTHROPONERA RUFIPES (Jerdon).

Two workers from Hong-kong (Terry). A well-known form from the Himalayas (up to 4,000 ft.), India, Ceylon, Burma, and Tenasserim.

4. ECTOMOMYRMEX JAVANUS Mayr.

One worker from Kuling, near Kiu-kiang. Nine workers from Mokanshan, one from Soochow and one female from Loka, between Shanghai and Foochow (Gee).

5. EUPONERA (BRACHYPONERA) LUTEIPES (Mayr).

A single worker from Hong-kong (Terry). Common throughout India, Ceylon, Burma, the Philippines, and the Malay Peninsula.

6. EUPONERA (BRACHYPONERA) NIGRITA Emery subsp. CHINENSIS Emery.

Workers and females from Soochow and several workers from Mokanshan (Gee). The female measures 5 mm. The node is broader, higher, and more compressed anteroposteriorly than in the worker. The wings are rather opaque, grayish hyaline, with pale brown veins and pterostigma.

This subspecies was originally described from Shanghai. The typical *nigrita* ranges over Burma, Tenasserim, and India and is closely related to *E.* (*B.*) *solitaria* F. Smith of Japan.

7. LEPTOGENYS (LOBOPELTA) KITTELI Mayr subsp. ALTISQUAMIS Forel.

Three workers and an imperfect male from Hong-kong (Terry). Hitherto known only from the Thaungyin Valley, Tenasserim.

8. LEPTOGENYS (LOBOPELTA) PEUQUETI Ern. André.

A single worker from Mokanshan (Gee).

9. ODONTOMACHUS HAEMATODA (Linné).

Two workers from Hong-kong (Terry), several from Mokanshan, Soochow, Foochow, and Ziang San (Gee).

10. ODONTOMACHUS MONTICOLA Emery subsp. PAUPERCULUS, subsp. nov.

Length about 6 mm.

Differing in its much smaller size from the typical *monticola*, its var. *longi* Forel and its subsp. *punctulatus* Forel, which measure from 10–13 mm. The posterior border of the head is scarcely emarginate in the middle, the occipital furrow is distinct but there is no median furrow on the front. The inner border of the mandibles bears eight denticles, which diminish in size basally where they are very small. Of the three apical teeth the most basal is large, rectangular and slightly longer than broad. Petiole convex in front and behind with short, stout, apical spine. The body is smooth and shining, except the front which has fine, posteriorly fanwise diverging rugae, and the mesonotum and dorsum of the epinotum, which are finely, transversely rugose. The pronotum, mesopleurae, and sides of the epinotum are entirely smooth and shining like the head. The posterior portion of the latter is very indistinctly and sparsely punctate. There are only a few hairs and they are on the gula, ventral surfaces of the mandibles, and posterior portion of the gaster. Color brownish red; mandibles slightly paler; gaster of the same color as the thorax but slightly darker above behind the first segment. Legs brownish yellow.

A single specimen from Mokanshan (Gee).

This subspecies is both smaller and smoother than any of the described forms of *monticola* and seems to be a northern and probably depauperate race. Forel has described two additional varieties, *formosae* and *major*, of the same species from Formosa, but both have the posterior portion of the head distinctly striated, especially *major*, which measures 13.5–13.6 mm.

DORYLINAE.

11. AENICTUS FERGUSONI Forel.

Many workers from Mokanshan and Soochow (Gee).

PSEUDOMYRMINAE

12. TETRAPONERA BINGHAMI (Forel).

Two workers and a female from Hong-kong (Terry). Known from India, Burma, the Shan States, and Tenasserim.

MYRMICINAE.

13. SOLENOPSIS SOOCHOWENSIS, sp. nov.

Female. Length, 3.5–4 mm.

Head a little longer than broad, subrectangular. Eyes rather small, just in front of the median transverse diameter of the head. Anterior ocellus in a distinct depression. Mandibles with oblique, 4-toothed blades, the basal teeth separated. Clypeus bicarinate, its anterior border with two stout median and two very small lateral denticles. Frontal area small, crescentic; frontal groove distinct; frontal carinae very short. Antennae 11-jointed; scapes not reaching to the posterior corners of the head; second funicular joint longer than broad; joints 3–8 fully as long as broad; basal joint of clava about half as long as the terminal joint. Thorax elliptical, robust, distinctly broader than the head; mesonotum nearly twice as long as broad; pronotum vertical in profile; epinotum abruptly sloping, short, with subequal base and declivity meeting at a rounded, very obtuse angle. Petiole somewhat longer than high, with short peduncle, furnished with a small ventral tooth at the anterior end, node from above somewhat transverse, broader than long, compressed anteroposteriorly. Postpetiole a little broader than the petiole, its node broader than long, very convex and rounded above. Gaster large, elliptical. Legs rather short.

Shining; mandibles very indistinctly striatopunctate, almost smooth. Head uniformly and rather coarsely punctate, front very finely and densely longitudinally striate; remainder of body with extremely fine, sparse, piligerous punctures.

Hairs white, very delicate, erect and abundant but rather short on the upper surface of the head, thorax, and pedicel, shorter and sparser on the gaster and appendages, somewhat oblique on the latter.

Yellowish brown; head darker and more reddish above; venter, posterior borders of gastric segments, mandibles, clypeus, cheeks, and appendages yellow; mandibular teeth dark brown. Wings whitish hyaline, with almost colorless veins and pale brown pterostigma.

Male. Length, 2.5–3 mm.

Head, including the eyes as broad as long, somewhat flattened above, semicircularly rounded behind, with very short cheeks. Mandibles slender, with three subequal teeth. Clypeus convex in the middle, without carinae, its anterior border feebly concave, edentate. Antennal scapes very short, as long as the two basal funicular joints together; first funicular joint swollen, a little longer than broad. Thorax like that of the female, but the epinotum more convex, with round, sloping base, much longer than the concave declivity. Petiole without a ventral tooth, its node very low; postpetiolar node flattened above. Legs slender.

Body smooth and shining as in the female, but head without coarse punctures, merely finely reticulate on the cheeks and behind the ocelli.

Hairs on the head, thorax, and pedicel much shorter and less abundant, those on the appendages very fine, sparse, and closely appressed.

Color like that of the female, body and head a little darker. Wings as in the female.

Described from numerous specimens of both sexes taken at Soochow by Prof. N. Gist Gee.

This species is evidently closely related to the common Eurasian *L. fugax* Latr., but is certainly distinct. The female of the latter species is considerably larger (4.7–6 mm.), darker, with much less shining head, thorax, and pedicel, with the thorax almost as coarsely punctate as the head, the epinotum more projecting, with very distinct base and declivity, a much shorter peduncle to the petiole, shorter median funicular joints, darker wing venation, sparser and more bristly hairs. The male *fugax* is also larger than the male *soochowensis*, much darker and more pilose, with the head, through the eyes, broader than long, finely rugulose and subopaque. In size, sculpture, and color of the two sexes and in the shape of the female epinotum and color of the wings the Chinese species is much more like the common Nearctic *S. molesta* Say, but the petiole and postpetiole of the female *molesta* are very differently shaped, the thorax is much narrower and more elongate, the pilosity is coarser, the head of the male is more narrowed and less rounded behind and the antennal scapes are decidedly shorter.

14. PHEIDOLOGETON DIVERSUS (Jerdon).

A soldier and female from Hong-kong (Terry) and two soldiers from Macao (Muir). A common and conspicuous ant throughout India, Burma, the Malayan Region, and the Philippines.

15. PHEIDOLOGETON AFFINIS (Jerdon).

Several soldiers and workers from Hong-kong (Terry). With much the same distribution as the preceding species.

16. PHEIDOLOGETON VESPILLO, sp. nov.

Worker maxima (?). Length, 3.5 mm.

Head rectangular, slightly longer than broad, with straight, parallel sides and very feebly excised posterior border, evenly convex above and below in profile. Eyes very small, flat, consisting of about 7–10 minute ommatidia, situated about $\frac{2}{5}$ the distance from the anterior corners of the head. Mandibles convex, with five blunt teeth, the two at the apex larger. Clypeus convex in the middle, with a pair of blunt, anteriorly diverging ridges, narrow and depressed on the sides, the anterior border sinuately notched in the middle. Frontal area small and indistinct, at the anterior end of a small elongate triangular impression. Frontal groove and carinae short, the latter diverging posteriorly. Antennae slender, the scapes reaching a little beyond the anterior half of the lateral border of the head; funicular joints 2–6 as long as broad, joints 7 and 8 longer than broad; basal joint of clava ⅔ as long as the terminal joint. Pro- and mesonotum in profile very convex, rounded, hemispherical, without promesonotal suture, from above half as broad as the head, as broad as long, narrowed behind to the deep mesoëpinotal constriction. Epinotum short, its base straight in profile and shorter than the sloping declivity, with a pair of erect, flattened teeth which are as long as broad at the base and curved forward and outward. Their bases are continued as a pair of anteriorly converging ridges on the base of the epinotum and posteriorly as a pair of parallel ridges down the sides of the declivity. Petiolar node small, angular in profile, with both the anterior and posterior slopes straight, its ventral outline evenly convex. Postpetiole large, three times as broad as the petiole, as long as broad, slightly narrower in front than behind, evenly rounded and convex above, but not higher than the petiole. Gaster smaller than the head, with straight anterior border. Legs rather long.

Very smooth and shining. Mandibles with a few small, very sparse punctures, their bases striated. Sides of clypeus, cheeks, and space on each side medial to the frontal carinae longitudinally striated. Mesopleurae and epinotum subopaque, the former very finely punctate-rugulose.

Hairs golden yellow, very sparse, erect, and rather long on the dorsal surface of the body, on the legs more numerous, fine and appressed.

Red; gaster and legs yellow.

Worker minima. Length, 1.5–1.8 mm.

Resembling the large worker, except in the small size of the head, which is more distinctly longer than broad, with more convex sides and more rounded posterior angles. Eyes smaller, a little in front of the middle of the sides. Mandibles, pro- and mesonotum less convex, the apical margins of the former oblique, with more acute teeth. Teeth of epinotum very small and slender, directed upwards.

Sculpture, pilosity, and color as in the larger worker.

Described from nine *maxima* and two *minima* workers from Mokanshan (Gee). Some of the former are almost intermediate in the size of the head between the two extremes. I am not certain that the largest really represent the *maxima* of this species which is closely related to such small Pheidologetons as *nanus* Roger of India and especially to *yanoi* Forel of Formosa.

17. Pheidole rhombinoda Mayr.

Many soldiers and workers from Soochow and Mokanshan; females and males from Soochow and between Shanghai and Soochow (Gee).

18. CREMATOGASTER ROGENHOFERI Mayr.

A single worker from Lo-foo-shan, 100–1,000 ft. (Muir), two workers from Soochow (Gee), and several from Canton (C. W. Howard). Known from India, Ceylon, Burma, and Cochin.

19. CREMATOGASTER LABORIOSA F. Smith.

Several workers from Soochow (Gee). Previously known only from Japan.

20. MESSOR LOBULIFER Emery.

Workers, males and females, from Soochow, "nesting on the university campus," Foochow and Mokanshan (Gee). Known from Mongolia and Shanghai.

21. APHAENOGASTER GEEI, sp. nov.

Worker. Length, 6.5–7.5 mm.

Head, including the mandibles, broadly and regularly elliptical, longer than broad, rounded behind, with marginate occipital border. Vertex with a distinct impression in the median line. Eyes moderately large, convex, at the middle of the sides of the head. Mandibles rather long, with straight lateral borders, three large apical and several smaller and more irregular basal teeth. Anterior border of clypeus rather broadly and sinuately emarginate in the middle. Frontal area large, triangular, impressed. Antennae slender; scapes extending scarcely more than $\frac{1}{4}$ their length beyond the occipital border of the head, at the base furnished with a flattened lobe resembling that of the North American *A. treatae* Forel, but smaller; all the funicular joints decidedly longer than broad, the terminal joints not forming a distinct clava. Thorax slender, narrower than the head, with pronounced mesoëpinotal constriction. Pronotum and anterior portion of mesonotum forming together a hemispherical mass, with evenly rounded dorsal and lateral surfaces; posterior portion of mesonotum sloping backward to the short mesoëpinotal constriction. Epinotum longer than broad or high, its base horizontal, feebly and evenly convex in profile and much longer than the vertical declivity, armed with two rather acute spines, which are scarcely longer than broad at the base and directed upward, backward, and outward. Petiole slender, its peduncle nearly as long as the node, which is somewhat conical in profile, with subequal anterior and posterior slopes. Postpetiole nearly twice as broad as the petiole, slightly longer than broad, with very convex, rounded node. Gaster of the usual shape, rather large. Legs long, fore coxae somewhat swollen as are also the middle portions of the femora.

Legs, including the coxae, mandibles, clypeus, frontal area, scapes, upper surfaces of the nodes, in some specimens, and gaster, shining; remainder of body nearly opaque. Mandibles sharply and densely striate. Clypeus longitudinally rugose. Head densely punctate and rugose, the rugae concentric around the antennal foveae, coarser, diverging and more or less anastomosing on the front, longitudinal on the sides of the head, coarse above and very fine below the eyes. Thorax, petiole, and postpetiole very finely and densely punctate, and with the exception of the mesopleurae very finely and indistinctly rugulose; base and declivity of epinotum very finely, transversely rugulose. Extreme base of first gastric segment above opaque, finely and densely punctate. Legs and remainder of gaster very smooth and shining, with very sparse, minute, piligerous punctures.

Hairs on the body yellowish, moderately abundant, coarse, and erect, not longer nor more abundant on the gaster than on the head and thorax; more numerous, shorter, finer, and subappressed on the scapes and tibiae.

Castaneous red; upper surface of head, except behind and in front, blackish; gaster black, except its tip. The latter, the trochanters, and bases of the femora more yellowish.

Female. Length, 9–10 mm.; wings, 10–10.3 mm.

Head, excluding the mandibles, scarcely longer than broad, distinctly broader behind than in front, with distinct, though rounded posterior corners. Antennae with the scapes lobed at the base as in the worker, but reaching only about $\frac{1}{5}$ their length beyond the posterior corners. Thorax very robust, broader than the head and as high as long. Epinotum steep, with distinct basal and declivous surfaces and with very stout, straight spines, which are distinctly longer than broad at their bases. Petiole and postpetiole similar to those of the worker, but stouter, with their nodes more compressed anteroposteriorly and each bearing a small, blunt tooth at the anterior end on the ventral surface. Gaster voluminous, broadly elliptical. Wings with a complete discoidal and two cubital cells.

Sculpture like that of the worker but much coarser. Pro- and epinotum transversely, pleurae, mesonotum, paraptera, and scutellum longitudinally rugose; mesopleurae partly smooth and shining and mesonotum with a median shining streak on its anterior half. Basal third of gaster opaque and densely punctate, the sparse, piligerous punctures on the remainder of the surface larger and more conspicuous than in the worker.

Pilosity like that of the worker, but the hairs more deeply yellow.

Nearly black; mandibles, cheeks, clypeus, appendages, posterior borders of gastric segments, and wing articulations, castaneous red. Wings colorless, with yellow veins and dark brown pterostigma.

Male. Length, 5–5.5 mm.

Head small, flattened above and below, including the eyes longer than broad and produced posteriorly. Cheeks very short. Mandibles with oblique apical borders bearing two larger terminal and three or four minute basal teeth. Clypeus with entire, broadly rounded anterior border. Scapes of antennae very short, not longer than the first two funicular joints together, broader at the base than at the tip; funicular joints all longer than broad. Thorax resembling that of the European *A. gibbosa* Latr., but more extreme, the posterior extension of the epinotum being nearly as long as the more anterior portion of the thorax and the constriction separating the two being more pronounced. The epinotal spines are reduced to a pair of minute teeth. Mesonotum extremely convex, in profile with a vertical, rounded, anterior and horizontal, rounded posterior surface. Nodes of the petiole and postpetiole very low, the peduncle of the former cylindrical, constricted anteriorly, the postpetiole campanulate. Gaster subtriangular. Legs, including the coxae, very slender, the middle and hind femora sinuately bent.

Smooth and shining; head opaque, finely and densely punctate, slightly shining about the ocelli. Pronotum very sparsely and rather coarsely punctate.

Hairs longer and much sparser than in the worker.

Black; legs piceous; mandibles, antennae, and tarsi dull yellowish. Wings colored as in the female, but the pterostigma is paler.

Described from eighteen workers, nine females and ten males taken from a single colony at Soochow by Prof. N. Gist Gee, to whom the species is dedicated. Also workers from Foochow. It is related to the Japanese *A. famelica* F. Smith, of which only the worker is known. This form is more brownish and less reddish, smaller and more slender, with longer head and antennae, and the scapes have no lobe at the base; the sculpture is feebler, the head behind and the pronotum, petiole, and postpetiole are smoother and shining, the transverse rugae on the base of the epinotum are more pronounced and the epinotal spines are smaller and more erect. The pro- and mesonotum above are not so high and rounded as in *geei*. The workers of the latter were compared with three workers of *famelica* from Saitama, Japan, in my collection.

22. APHAENOGASTER EXASPERATA, sp. nov.

Worker: Length, 5.5–6 mm.

Head oval, without posterior corners, less than $1\frac{1}{2}$ times as long as broad, with marginate occipital border. Eyes convex, at the middle of the sides. Mandibles with slightly concave external borders, with three large apical and several smaller basal teeth. Clypeus rather flat in the middle, its anterior border indistinctly notched. Frontal carinae erect, lobular, prominent. Frontal area large, triangular, impressed. Antennal foveae large. Antennae long and slender; scapes not lobulate at the base, straight, reaching nearly $\frac{1}{3}$ their length beyond the occipital border; funiculi with indistinctly 4-jointed clava; joints 2–5 fully twice as long as broad. Thorax long and slender; pronotum flattened above and obscurely submarginate on the sides. Promesonotal suture distinct. Mesonotum slightly and abruptly raised in front and then sloping backward and downward, with rather uneven outline in profile, to the short and rather deep mesoëpinotal constriction. Epinotum longer than high or broad, its base rising abruptly in front, distinctly convex above and twice as long as the declivity, longitudinally grooved in the middle; the spines acute, directed upward and backward and slightly curved inward; as long as the declivity and the interval between their bases. Petiole rather small, twice as long as broad through the node, which is shorter than the peduncle, conical above and constricted behind. Postpetiole pyriform, longer than broad, somewhat less than twice as broad as the petiolar node, the node feebly convex anteriorly in profile and distinctly concave behind. Gaster rather large. Legs long and slender. Middle and hind tibiae with distinct but slender spurs.

Shining; mandibles subopaque, very finely and sharply longitudinally striate. Head coarsely and sharply reticulate rugose, the rugae diverging on the front, those starting from the anterior corners making a sigmoidal curve, bending outward around the antennal foveae, turning inward around the inner orbits and then laterally again. Neck finely and transversely rugulose. Thorax coarsely rugulose like the head but less strongly and more irregularly. Pronotum above smooth and shining in the middle, on the sides finely and longitudinally striate. Base of epinotum strongly and rather regularly transversely rugose, the concave declivity with similar but feebler sculpture; mesopleurae and sides of epinotum more irregularly punctate-rugose. Petiole and postpetiole smooth and shining, except their ventral surfaces which are subopaque and very finely and densely punctate. Gaster smooth and shining, the basal third of the first segment subopaque and very finely and densely striolate.

Hairs yellow, coarse, obtuse, moderately long and abundant on the body, much finer and more appressed on the legs, especially on their flexor surfaces.

Dark reddish brown; legs, including the middle and hind coxae, the tip of the gaster, and the posterior margins of its segments brownish yellow; mandibles, neck, sides of pronotum, fore coxae, and antennae red; apical halves of femora infuscated.

Described from eighteen specimens taken by Professor Gee at Mokanshan.

This species is very distinct, being quite unlike *famelica* and *geei*. In certain respects it resembles *A. rothneyi* Forel of India and central China and especially its subspecies *tipuna* Forel of Formosa.

23. MONOMORIUM PHARAONIS (Linné).

Workers and females from Canton (C. W. Howard) and Soochow (Gee).

24. MONOMORIUM CARBONARIUM F. Smith.

Workers from Soochow and between Shanghai and Foochow (Gee).

25. MYRMECINA GRAMINICOLA (Latreille) subsp. SINENSIS, subsp. nov.

Worker. Length nearly 2.3 mm.

In size and color closely resembling the subsp. *nipponica* Wheeler of Japan but differing in the following particulars: — Head with more rounded sides and posterior corners. Clypeus completely lacking the teeth which are so prominent in the typical European *graminicola* and even in the Japanese form. The anterior border of the clypeus is merely rounded and sinuately emarginate in the middle. The epinotal spines and teeth are much as in *nipponica*, but the sculpture and pilosity are different. The mandibles are opaque and very finely shagreened; the rugae of the head and thorax are much less pronounced and the surface is more opaque. The hairs on the dorsal surface of the body are much shorter and distinctly more appressed, especially on the gaster.

Described from two specimens from Mokanshan (Gee).

26. PRISTOMYRMEX JAPONICUS Forel.

A single worker from Soochow and sixteen workers from Mokanshan (Gee). This species, originally described from Japan, has also been recorded by Forel from Formosa.

27. TETRAMORIUM CAESPITUM (Linné).

Numerous workers from Mokanshan and between Shanghai and Foochow and a few from Soochow and Western Hills, Peking (Gee), all very much like the typical European form.

28. MERANOPLUS BICOLOR (Guérin).

A single worker from Hong-kong (Terry). This is a common species in India, according to Bingham "avoiding only the hot plains of the North Western Provinces, Punjab and Central India. Common throughout Burma and Tenasserim and extending to the Malayan subregion."

DOLICHODERINAE.

29. DOLICHODERUS (HYPOCLINEA) TAPROBANAE F. Smith.

Workers and females from Canton (C. W. Howard).

30. LIOMETOPUM SINENSE, sp. nov.

Worker. Length, 3.3–4.5 mm.

Head large and broad, as broad as long, very broad behind, narrowed in front, the anterior corners not swollen and prominent. Mandibles moderately convex, with four large apical and five or six smaller basal teeth. Clypeus rather flat in the middle, ecarinate, with straight, transverse anterior border. Eyes flattened. Frontal area and frontal groove obsolete. Frontal carinae subparallel, diverging only at their extreme posterior ends. Antennal scapes scarcely reaching beyond the posterior corners of the head; funicular joints 1–6 distinctly longer than broad, joints 7–10 as broad as long, terminal joint as long as the two preceding joints together. Thorax narrower than the head; with distinct promesonotal and mesoëpinotal sutures; in profile with the dorsal outline straight, gradually sloping backward from the anterior end of the mesonotum to the epinotal declivity, which is a little shorter than the base of the epinotum, feebly convex and more steeply sloping. Petiolar node in profile cuneate, not very thick at the base, inclined forward, narrowed and gradually compressed anteroposteriorly, above with narrowly rounded but rather acute border. Gaster large and somewhat flattened dorsoventrally. Legs moderately long and stout.

Shining; very finely and densely punctate-shagreened; mandibles sparsely and evenly punctate.

Hairs and pubescence pale yellow, the former very delicate and sparse, rather short and of uneven length. Pubescence very short and delicate, closely appressed on the head, thorax, petiole, and appendages, and so dilute as not to conceal the sculpture; on the gaster longer, denser, and coarser, diverging from the middorsal line posteriorly on the first segment and strongly converging towards this line on the second and third segments.

Reddish brown, gaster dark brown, with the posterior borders of the segments brownish yellow; mandibular teeth black; tarsi yellowish; tips of tarsal claws dark brown; femora, except their bases and tips, darker than the tibiae.

Described from eighteen specimens taken at Soochow by Professor N. Gist Gee.

Resembling *L. lindgreeni* Forel of Assam and Burma in color, but the head in this species, judging from a cotype received from Professor Forel, is decidedly smaller and narrower behind, the eyes are much more convex, the antennal scapes extend nearly $\frac{1}{5}$ their length beyond the posterior border of the head, the petiolar node is lower and thicker, and the hairs and pubescence are longer and less appressed, especially on the tibiae and antennal scapes. On these parts, in fact, the hairs are abundant and suberect. The pubescence on the gaster seems to be somewhat sparser than in *sinense* and seems not to converge or diverge but to be directed uniformly backward on all the segments. The specimen is rather greasy, however, so that I am in doubt in regard to this character. Forel makes no statement concerning the arrangement of the gastric pubescence. The South European *L. microcephalum* Panzer is more like *sinense* in the size of the head, but it is not so broad and its anterior angles are conspicuously swollen, the thorax is more convex and arcuate in profile, the petiole is more acuminate above, and though the pubescence on the gaster is similar in texture and arrangement, the erect hairs on the head and thorax are longer and more abundant. The color of the body is very different.

31. LIOMETOPUM SINENSE var. SERICATUM, var. nov.

Worker. Differing from the typical *sinense* in having somewhat larger eyes and the anterior angles of the head more protuberant, in the less reddish and more fuscous tint of the body and in the pubescence, which is much finer and denser, especially on the gaster so that the surface is completely concealed. The pubescence is also more silky and more yellowish.

Numerous workers from Mokanshan (type-locality), Foochow and Soochow, and a single defective female from Foochow (Gee).

32. TECHNOMYRMEX MODIGLIANII Emery subsp. ELATIOR Forel.

A single worker from Dei Chow, East River (Muir). Previously known from Upper Burma and the Shan States.

33. TAPINOMA MELANOCEPHALUM (Fabricius).

A single worker from Macao (Muir). A well-known tropicopolitan species.

34. IRIDOMYRMEX GLABER Mayr.

A single worker from Soochow (Gee).

35. IRIDOMYRMEX ANCEPS Royer.

Numerous workers taken between Shanghai and Foochow (Gee).

FORMICINAE.

36. PLAGIOLEPIS ROTHNEYI Forel subsp. WATSONI Forel.

A worker from Macao and one from Lo-foo-shan, 100–1,000 ft. (Muir). According to Bingham, "spread throughout the whole of Burma and Tenasserim and extending into Siam." The typical form of the species occurs in Bengal and western India.

37. PLAGIOLEPIS WROUGHTONI Forel.

Workers, males and females from Soochow, Foochow, and Pei-tai-ho, North China (Gee).

38. PRENOLEPIS (NYLANDERIA) FLAVIPES (F. Smith).

Two workers from Soochow (Gee). Previously known only from Japan.

39. PRENOLEPIS (NYLANDERIA) EMMAE Forel.

Worker. Length, 2.3–2.8 mm.

Head nearly circular, with rather large, elliptical and moderately convex eyes placed on the upper surface a little in front of the middle. Mandibles narrow, concealed under the clypeus which is convex but not carinate, with nearly straight anterior border. Frontal area indistinct. Antennae very long; the scapes straight and slender, extending a little more than half their length beyond the occipital border of the head; all the funicular joints more than twice as long as broad. Thorax long and slender, narrower than the head and of an aberrant structure. Pronotum feebly rounded in profile, nearly circular from above, as long as broad and nearly enclosing the anterior part of the mesonotum which is feebly concave in profile and strongly constricted behind where it joins the posterior portion. The latter is shorter than the anterior portion, broadened behind and bearing the mesonotal stigmata on its dorsal surface. The epinotum rises suddenly in profile as a very convex, hemispherical mass, with distinct stigmata and subrectangular metasternal corners. Petiole nearly three times as long as broad, broadest in front where the node is situated, sides slightly concave from above, the posterior angles in the form of acute teeth. In profile the node is low and rounded, its anterior declivity short and very abrupt, its posterior declivity long, straight, and sloping. Gaster rather large, very convex above, its anteriorly bulging first segment with an impression on its surface for the accommodation of the underlying petiole. Legs long and slender.

Shining; head finely shagreened and less shining than the pronotum; remainder of thorax subopaque, very densely and indistinctly punctate-shagreened and somewhat glossy. Gaster and legs shining, with small, sparse, piligerous punctures.

Hairs yellow; the macrochaetae on the body long, curved, and prominent, absent on the mesonotum, epinotum, and petiole, not very blunt at their tips. Hairs on the legs and scapes delicate, oblique and more abundant.

Head yellowish brown; thorax brownish yellow; somewhat darker and more reddish posteriorly. Legs and anterior three fourths of gaster clear yellow; remainder of gaster dark chestnut-brown, sometimes with the base of the second segment yellow. Antennae somewhat paler than the head; flexor surfaces of the tibiae distinctly infuscated.

Redescribed from six specimens taken at Mokanshan (Gee).

This is a beautiful and very striking species, quite unlike any Prenolepis of which I have seen specimens or descriptions. In the peculiar structure of the thorax it remotely resembles *P. mjöbergi* Forel and another Australian species (undescribed) in my collection.

40. LASIUS NIGER (Linné).

Six workers and a female from Soochow (Gee) and a single worker from Pei-tai-ho, North China (Gee).

41. LASIUS (DENDROLASIUS) FULIGINOSUS (Latreille).

A single worker from Hong-kong (Muir). Ranging from England to Japan and south as far as western India but not previously recorded from southern China.

42. FORMICA FUSCA Linné var. JAPONICA Motschulsky.

Numerous workers and two deälated females from Mokanshan, workers from Kuling, near Kiu-kiang (Gee). The females measure

8–8.5 mm. and closely resemble the worker in their opaque color and pilosity, except that the legs are darker.

43. OECOPHYLLA SMARAGDINA (Fabricius).

Numerous workers from Canton (C. W. Howard). This is the common Indomalayan "red tree-ant" which uses its larvae for spinning films of silk between the leaves that are brought together to form the nest.

44. CAMPONOTUS HERCULEANUS (Linné) subsp. JAPONICUS Mayr var. ATERRIMUS Emery.

Many workers, three females and two males from Soochow and numerous workers of all sizes from Mokanshan, Foochow, North Pei-tai-ho and Western Hills, Peking (Gee). Recorded from eastern Siberia and China.

45. CAMPONOTUS CARYAE Fitch var. QUADRINOTATUS Forel.

Many workers, a male and female from Soochow (Gee). Previously known only from Japan.

46. CAMPONOTUS (DINOMYRMEX) DORYCUS (F. Smith) subsp. CARIN Emery.

A single minor worker from Hong-kong (Muir) and five minor workers and a major from Mokanshan (Gee). Originally recorded from Tenasserim (Fea) and Burma (Bingham).

47. CAMPONOTUS (MYRMOTURBA) BARBATUS Roger subsp. ALBOSPARSUS Forel.

Numerous workers from Soochow and Loka between Shanghai and Foochow (Gee).

48. CAMPONOTUS (MYRMOTURBA) FRIEDAE Forel.

Numerous workers taken between Shanghai and Foochow (Gee).

49. CAMPONOTUS (MYRMOTURBA) NICOBARENSIS Mayr var. EXIGUOGUTTATUS Forel.

Several workers and three females from Hong-kong (Terry) and a single worker from Dei Chow, East River (Muir). The typical form of the species occurs in the Nicobars, Burma, Assam, and China. The varieties *exiguoguttatus* and *monticola* Emery are merely darker forms.

50. CAMPONOTUS (MYRMOSERICUS) RUFOGLAUCUS (Jerdon) subsp. PARIA Emery.

A worker minor from Macao (Muir).

51. CAMPONOTUS (COLOBOPSIS) LAOTSEI, sp. nov.

Soldier. Length, 4–4.5 mm.

Head large, rectangular from above, about $1\frac{1}{3}$ times as long as broad, distinctly broader in front than behind, the posterior and lateral borders straight, the obliquely truncated anterior surface broadly and transversely elliptical, concave with very sharp border. Eyes moderately large, well behind the middle of the head. Median portion of clypeus somewhat concave but sharply carinate, parallel-sided, $1\frac{1}{2}$ times as long as broad on the truncated surface and extending onto the dorsal surface of the head where it forms a pair of angular projections when seen from above. Lateral portions of clypeus distinct, convex, triangular. Mandibles convex, about as broad as long, with four subequal teeth, the basal third of the apical border toothless, straight, and forming a perfect right angle with the basal border. Frontal carinae far apart, straight, and diverging. Frontal area small, impressed; frontal groove distinct as a shining line. Antennal scapes curved, not much thickened apically, their tips reaching half-way between the posterior orbits and the posterior corners of the head. Thorax only as long as the head, narrower, thick-set, evenly contracted behind, with distinct promesonotal and mesoëpinotal sutures, the dorsal outline in profile straight and feebly sloping posteriorly; pronotum convex in front, epinotum with subequal base and declivity meeting at a very broadly rounded angle. Petiole small and very low, its superior border transverse and very blunt, distinctly emarginate in the middle. Gaster as long as the head and thorax together. Legs rather short, fore femora incrassated.

Shining; head and thorax sharply shagreened, the gaster transversely; anterior half of head more opaque, especially above and on the sides, densely and rather finely punctate-rugulose. Mandibles more shining, finely shagreened and indistinctly and finely punctate.

Hairs erect, whitish, short and extremely sparse, visible only on the head, gaster and tips of femora. Cheeks with short but distinct pubescence. Legs and scapes with still shorter, appressed hairs.

Black or dark brown; mandibles and anterior third of head red, antennae and legs paler brown, the femora infuscated, except at their bases and tips; tarsi and first funicular joint yellowish.

Worker. Length, 2.3–2.4 mm.

Head small, longer than broad, as broad behind as in front, convex above, with subparallel sides and nearly straight occipital border. Eyes large, nearly ¼ as long as the sides of the head, feebly convex. Mandibles narrow, apparently 4-toothed, folded under the clypeus, which is convex but ecarinate, trapezoidal, somewhat broader than long, with entire, broadly rounded anterior border. Frontal carinae short, slightly diverging. Antennal scapes extending about ¼ their length beyond the occiput. Thorax and gaster shaped much as in the soldier, but the petiolar node is convex in front and flat behind and has a sharp, obscurely emarginate superior border.

Sculpture, pilosity, and color as in the soldier, except that the mandibles and anterior portion of the head are as dark as the remainder and not punctate-rugulose.

Described from three soldiers and three workers taken by Professor Gee at Mokanshan.

This species is rather closely allied to *truncata* Spinola of Europe and especially to *rothneyi* Forel of India. These species, however, have the anterior portion of the head much more coarsely sculptured. The typical *rothneyi* is also of a very different color, having the head and thorax testaceous red and the gaster black. Forel has recently described a black form from Formosa as *C. rothneyi* var. *taivanae* from a female specimen measuring 6 mm. This may, perhaps, be cospecific with the soldier and worker described above.

52. POLYRHACHIS LAMELLIDENS F. Smith.

Workers from Mokanshan and Soochow (Gee) agreeing in all respects with specimens from Japan, the type-locality. This ant is also known from Hong-kong.

53. POLYRHACHIS (MYRMA) PYRGOPS Viehmeyer.

Two workers from Hong-kong (Terry) and seven from Mokanshan and one from Ziang San, near Ningpo (Gee).

54. POLYRHACHIS (MYRMHOPLA) DIVES F. Smith.

Six workers from Mokanshan and many taken between Shanghai and Foochow (Gee), together with pieces of the nest consisting of silk and vegetable detritus. This species is common and widely distributed in the Indomalayan subregion.

55. POLYRHACHIS (MYRMHOPLA) HIPPOMANES F. Smith var. MOESTA Emery.

A single worker from Mokanshan (Gee). This variety, originally described from Sumatra, occurs also in Formosa. I have seen specimens from the Philippines.

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